DOCUMENT RESUME

ED 119 945 SE 019 504

AUTHOR Stapp, William B., Ed.; Cox, Dorothy, A., Ed.
TITLE Environmental Education Activities Manual, Book 2: Lower Elementary Activities.
PUB DATE 74
NOTE 135p.; For related Books 1-6 in this series, see SE 019 503-508; Best Copy Available
AVAILABLE FROM Dorothy A. Cox, 30808 Lamar, Farmington Hills, Michigan 48024 (not for sale separately; sold only as a complete set containing Books 1-6, $10.00, plus postage)

EDRS PRICE MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS Concept Formation; *Environmental Education; *Instructional Materials; *Learning Activities; *Primary Education; Problem Solving; Program Development; Skill Development; *Teaching Guides; Values

ABSTRACT

This activities book for lower elementary grades is the second book of a series of six books designed to provide developmental K-12 experiences designed to support the basic environmental philosophy of spaceship earth. The aims of the four activity sections of this book are to aid in developing students to make them more sensitive to their environment, able to recognize problems, reach a sophistication in using problem solving skills, and inclined to participate in action activities. The Concept Development Activities Section was developed to assist teachers in assisting students to further their understanding of major concepts basic to the development of an environmentally literate citizenry. These concepts are: ecosystem, population, economics and technology, environmental decisions, and environmental ethics. The Skill Developing Activities Section identifies eight skills as being essential to the environment problem solving process. For each of the eight skills, skill developing activities have been designed. The Values Clarification Activities Section contains sample strategies that teachers have found helpful in assisting students to clarify their values regarding environmental issues. The Environmental Encounters Activities Section contains a series of school-community environmental problem solving activities. (BT)

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William B. Stapp

Dorothy A. Cox

LOWER ELEMENTARY ACTIVITIES

2

ENVIRONMENTAL EDUCATION ACTIVITIES MANUAL

Book 1: CONCERNING SPACESHIP EARTH

Book 2: LOWER ELEMENTARY ACTIVITIES

Book 3: MIDDLE ELEMENTARY ACTIVITIES

Book 4: UPPER ELEMENTARY ACTIVITIES

Book 5: JUNIOR HIGH ACTIVITIES

Book 6: SENIOR HIGH ACTIVITIES

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Grateful acknowledgment is made to Hart Publishing Company, Inc., for permission to reprint excerpts from its copyrighted volume VALUES CLARIFICATION: A Handbook of Practical Strategies for Teachers and Students by Sidney B. Simon, Leland W. Howe and Howard Kirschenbaum.

Booklet cover designs by Earl Wolf.

Published by
William B. Stapp
and Dorothy A. Cox
20808 LaMar
Farmington Hills, Michigan 48024

Material photocopied and printed by
Thomson-Shore, Inc.
7300 W. Huron River Drive
Dexter, Michigan 48130

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PREFACE

This grade level activities book is one in a series of six books which provide developmental K-12 experiences designed to support the basic environmental education philosophy of spaceship earth.

The educators who use this activity book are encouraged to thoroughly acquaint themselves with the philosophy, model description, implementing guidelines, and resource opportunities in Book 1.

The aim of the four activity sections of this book is to aid in developing students more sensitive to their environment, who are able to recognize problems, reach a sophistication in using problem solving skills, and are inclined to participate in action activities to deal with environmental problems.

The following pages include only a sample of activities meant to suggest a host of possible spin-offs. To be most effective they will most probably need to be altered to fit individual situations and student backgrounds.

William B. Stapp
Dorothy A. Cox

August, 1974

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Section I

Lower Elementary Concept Developing Activities

SECTION I

Concept Development Activities

The following Concept Development Activities were developed to assist teachers in assisting students to further their understanding of five major concepts basic to the development of an environmentally literate citizenry.

The five major environmental education concepts are: ecosystem, population, economics and technology, environmental decisions, and environmental ethics.

For each of the five concepts, specific understandings have been identified as appropriate for lower elementary, middle elementary, upper elementary, junior high, and senior high. Two activities have been developed for each understanding to assist students in furthering their understanding of each of the five concepts. The activities were also designed to enrich existing subject matter.

The concepts, understandings, and supportive activities that have been developed are listed on the following pages of this section.

-3-/4

Concept: Ecosystem

Understandings:

A. Lower Elementary (Kdg, 1st & 2nd)

1. The earth can be thought of as a "spaceship," containing all of the air, water, and land we will ever have.

2. The sun is the basic source of energy for all life in every ecosystem.

3. Plants capture sunlight and use it to help them make the food and oxygen that people and other animals need in order to live.

4. Some animals eat other animals which in turn eat plants; some animals (like people) eat both plants and animals.

B. Middle Elementary (3rd & 4th)

1. An ecosystem consists of all the plants and animals in a given area interacting with each other and their non-living environment.

2. The interaction of plants, animals and their non-living environment form many cycles in an ecosystem (carbon or food cycle, mineral cycles, water cycles, etc.).

3. Some of the sun's energy has been stored in coal peat, petroleum, natural gas, and other fossil fuels.

C. Upper Elementary (5th & 6th)

1. There are different forms of energy (i.e. light, heat, electricity, food, etc.).

2. Energy is neither created nor destroyed, but can be changed from one form into another.

3. With each transfer of energy (i.e., food chain) within an ecosystem, some energy is lost (mainly as heat energy).

4. Humans frequently, knowingly and unknowingly, waste energy.

D. Junior High (7th & 8th)

1. Anything added to the environment which accumulates in sufficient quantity to be unwanted by someone is pollution.

2. Too much pollution normally results in damaging the environment.

3. Natural cycles and systems have limited capacity to cycle or disperse pollutants.

4. Humans and natural resources are distributed unevenly around the earth.

E. Senior High (9th, 10th, 11th & 12th)

1. An ecosystem is complex and is vulnerable to sudden or long-term disturbances.

2. Human beings are capable of strongly altering the cycles and systems of the earth.

3. More diverse communities tend to be more stable.

4. Fission and fusion are two relatively new sources of energy.

Concept: Population

Understandings:

A. Lower Elementary (Kdg., 1st & 2nd)

1. A population is a group of plants and animals of the same kind living in the same area.

2. Populations interact with each other and their environment.

3. Populations are part of a given community.

4. The human community is closely interrelated with its environment.

B. Middle Elementary (3rd & 4th)

1. Populations increase, decrease, or stabilize depending on their interaction with each other and their environment.

2. The life style of a human population can affect the environment in significant ways.

C. Upper Elementary (5th & 6th)

1. Human beings both produce and consume materials.

2. Human populations have different standards of living which produce different environmental consequences.

3. As human populations grow, it becomes more difficult to attain and maintain environmental quality.

D. Junior High (7th & 8th)

1. Population changes like births, deaths, growth rates and migration patterns affect individuals, their surroundings and society.

2. The U.S. consumes a disproportionate amount of the earth's resources.

3. Populations have birth rates, death rates, growth rates, densities, immigration rates, emigration rates and age structures.

E. Senior High

1. As long as a few countries consume a disproportionate quantity of the earth's resources, while other countries need these resources, there will be political instability in the world.

2. Different sectors of populations have varying degrees of access to natural resources they need in order to survive.

3. Any position on human population policy has personal, social, ecological, political, and economic implications.

Concept: Economics and Technology

Understandings:

A. Lower Elementary (Kdg., 1st & 2nd)

1. In our country, people are generally trained to perform certain types of work. Teachers, farmers, factory workers, conservationists, as well as other workers, all have special jobs to perform.

2. The food most people eat, clothes they wear and the homes they live in are paid for by the money they earn from doing their jobs.

3. Industries and business sell some things that people want and need: and encourage people to buy some things that factories have made, but people don't really need.

4. Not all people have enough money to buy all the things they need, want, or are encouraged to buy.

B. Middle Elementary (3rd & 4th)

1. The way people live their lives has an effect on how the earth's resources are used.

2. The way people live their lives has a direct effect upon the amount and type of industrial growth that takes place.

3. Businesses can create a demand for a product through the use of advertising.

C. Upper Elementary (5th & 6th)

1. The cost of producing a particular product includes such things as the resources used, wages of workers, advertising, taxes and improving working and environmental standards.

2. There are two kinds of costs associated with pollution: the cost of preventing pollution, and the cost of (or damage from) pollution once it occurs.

3. Some pollution costs cannot be put into dollars and cents.

D. Junior High (7th & 8th)

1. Usually, the costs (economic, resource and technological) of goods and services vary proportionately to societal demands for those goods and services.

2. Patterns and practices of using the earth's resources are largely determined by people's life styles, and the level of industrialization necessary to meet the demands of such life styles.

3. As the production of goods increases with demand, consumption of resources also increases.

4. Both supply and demand of a product influence the cost of the product.

E. Senior High (9th, 10th, 11th & 12th)

1. Economic systems constitute the societal arrangements for producing and distributing the goods and services that individuals and societies desire.

2. Some businesses and industrial plants in the process of producing marketable products pass on social costs (i.e., air, water, and noise pollution) to society.

3. Satisfaction with the philosophy and functioning of the economic system is a major factor in the quality of life for individuals served by that economic system.

4. Each country has its own particular economic system, but all countries' economic systems are tied together through world markets of raw materials, food, and manufactured goods. Thus economic events that occur in one country affect other countries (i.e., crop failures).

5. Three major ecological trade-offs are (1) between population growth and environmental quality, (2) between levels of production and environmental quality, and (3) between the degree of urbanization and environmental quality.

Concept: Environmental Decisions

Understandings:

A. Lower Elementary (Kdg., 1st & 2nd)

1. To make a decision is to make a choice.

2. A decision can be made by one person or by a group of people such as a family or a class.

B. Middle Elementary (3rd & 4th)

1. Environmental decisions should be made only after considering all alternatives and the consequences of each alternative.

2. Your personal feelings and the feelings of others should be considered before you decide to act.

C. Upper Elementary (5th & 6th)

1. Many environmental decisions are made by consumers, governments, businesses, industries, clubs, and various community groups.

2. People working together with similar interests can often be more effective in influencing environmental decisions than individuals working alone.

D. Junior High (7th & 8th)

1. Making effective environmental decisions requires consideration of ecological, economic, political and social and technological aspects of the problem.

2. Effective environmental decision-making includes considering carefully the pros and cons of all possible alternative solutions, policies and actions, and studying the trade-offs among them.

3. Individual or personal decision-making involves one's feelings, attitudes, and values.

4. In many cases it is necessary to change the law in order to prevent environmental abuses.

E. Senior High (9th, 10th, 11th & 12th)

1. Decisions not carefully thought through frequently have unwanted results.

2. People most often affected by environmental abuses may be the least able to bring about effective action to correct them.

3. Environmental decisions should seek to improve the lives of people from all socio-economic classes.

4. Some people and organizations have more power to influence decisions than others.

Concept: Environmental Ethics

Understandings:

A. Lower Elementary (Kdg. 1st & 2nd)

1. Children all over the world have similar basic needs.

2. Every individual has something which he gives and which he receives from society.

B. Middle Elementary (3rd & 4th)

1. If human beings protect the earth it will be able to continue to support a diversity of living things.

2. Humans can be "stewards" of the earth, rather than careless exploiters of it.

3. Humans can develop both a way of thinking and feeling about the earth if we are to live harmoniously with each other and our environment.

C. Upper Elementary (5th & 6th)

1. If humans develop an ecologically sound way of thinking, feeling, and acting toward the earth, then we will be able to live harmoniously with each other and our enviornment.

2. If we protect the earth it will continue to meet the needs of all living things, now and in the future.

D. Junior High (7th & 8th)

1. The earth's resources exist for all living things, not just man.

2. Certain life styles enable man to live as a complimentary part of the environment.

E. Senior High (9th, 19th, 11th & 12th)

1. Only when each of us lives a life guided by respect for the earth and all living things, now and in the future, will we be able to live in harmony with each other and our environment.

2. An essential part of an environmental ethic is a human ethic based on social justice for all individuals and groups.

Lower Elementary B. Diane Boyd

Building a Terrarium

1. Concept to be developed: Ecosystem

2. Understanding to be developed: The earth can be thought of as a "space-ship", containing all of the air, water, and land we will ever have.

3. Time: 1/2 day to set up the terrarium
   Several days for observation

4. Materials:

   a. A transparent container such as a mayonnaise jar
   b. Digging tools
   c. Plants
   d. Rocks, soil, and gravel
   e. Worms, insects, and "critters"

5. Procedure:

   a. Take a short trip outside and bring digging tools.

   b. Collect plants, rocks, gravel, soil, worms, and insects and return to the classroom.

   c. Look at collected material under a magnifying glass.

   d. Put soil in one container and gravel and rocks in another.

   e. Pour water in each container and see how the soil soaks up the water and the rocks do not.

   f. Look at the plants collected, pointing out the various parts.

   g. Discuss each rock asking what might hide under or sit on each one.

   h. Construct the terrarium, encouraging the class to build their own at home.

   i. Begin daily observations of the activity in the terrarium.

6. Discussion Questions:

   a. Why is the terrarium like a "mini" world?

   b. What do the plants need in order to survive?

   c. Where do plants get food for their growth? (sun and carbon dioxide from the air)

d. Could the plants survive without the air, water, and soil?

e. Where do animals get their food for growth and survival?

f. What else do animals need for survival? (Oxygen from the air, water, plants, etc.)

g. What do people need to survive?

h. What will happen if our air and water becomes more polluted?

7. References:

a. Environmental Learning Experiences for Kindergarten Through Second Grade. Center for the Development of Environmental Curriculum, Ohio Department of Education

Model of the Earth

1. Concept to be developed: Ecosystem

2. Understanding to be developed: The earth can be thought of as a "spaceship" containing all of the air, water, and land we will ever have.

3. Time: 3 days - day 1 - assemble system
   day 2 - observation
   day 3 - concluding discussion

4. Materials:
   a. Preferably, a sand or water table. If this is not available and/or feasible to use, a dishpan or two in a large box will suffice.
   b. Water and soil.
   c. Plastic drop cloth, large enough to cover the "spaceship" - tape
   d. School milk cartons (1 per child)
   e. Art materials, writing paper, pencils
   f. Oak tag and felt pens for making charts and labels.
   g. A globe, preferably a primary type.

5. Procedure:

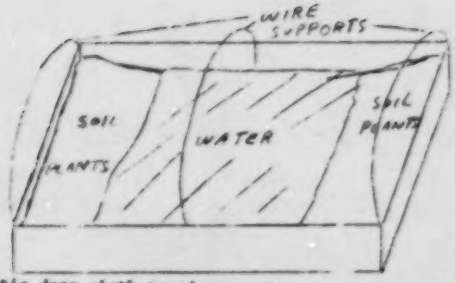
   a. Initial discussion and labeling of the total container as "The Earth." State that the globe is a model of the earth and that they, too, are going to build a model of the earth containing proportionate amounts of land and water.

   b. Lead children to observe that there is more water than land on the earth, and, if possible, the proportions of 2:1 should be observed or given.

   c. Using the milk cartons, count how many cartons of soil are being designated as "Land" in this earth model. The children can then pour the soil into the labeled container.

   d. Using the 2:1 ratio, fill twice as many milk cartons with water as were used for soil. This water is then added to the system and labeled as "Water."

   e. Using the plastic drop cloth, cover the system. Lead the children to see that there is air enclosed and that what is enclosed is the <u>total</u> of this earth's air, land, and water.



Plastic drop cloth taped securely around the table: propped up by supports.

f. After the model has been assembled, a story chart should be composed by the group and written by the teacher. The terms model, earth, land, water, and air and their meanings should be re-emphasized.

g. An opportunity for art expression of the activity should at least be available to the children.

h. The following day the concept that this is a closed system should be reviewed and reinforced with the children.

i. The children should be led to see that water can be seen on the plastic due to the process of evaporation and condensation.

j. An experience chart depicting this process might look like the following:

Sun

Condensation • Rain

Water - vapor - air

Evaporation

Water Land

6. Discussion Questions:

a. What is a model?

b. If a model is an exact replica but in smaller proportions, then what does the soil, water, and enclosed air represent?

e. What changes were observed, if any?

d. Did anything escape?

e. Was anything added?

f. If, then, this is an exact model of the earth, can we assume that the same changes can be observed on the real earth? (Observe a puddle evaporating; discuss cloud formation, observe rain.)

g.* Is there a limited amount of air (not space) around our real earth? Is there a limited amount of water? Of land?

*(Note: The pans are containers for soil and water: the plastic is simply the container for air. Do not allow the misconception that there is any kind of covering enclosing the atmosphere.)

7. References:

a. Glossary of terms:

1. Model--a small representation of a larger idea

2. Earth--the planet on which we exist, a closed ecosystem.

3. Ecosystem--An ecosystem consists of all of the plants and animals in a given area interacting with their non-living environment.

4. Closed "Ecosystem"--contains all the air, water, land we will ever have.

5. Soil--land
Water--seas, rivers, etc.,
Air--atmosphere

Lower Elementary B. Diane Boyd

What Do Plants Need To Grow?

1. Concept to be developed: Ecosystem

2. Understanding to be developed: The sun is the basic source of energy for all life in every ecosystem.

3. Time: One week if you buy plants
   Several weeks if you grow your own

4. Materials:

   a. Seeds
   b. Pots (with holes in the bottom)
   c. Soil
   d. Two plants

5. Procedure:

   a. Be sure one plant has enough sun, the right soil, and enough water daily.

   b. Keep the second plant in the closet and give it ample water.

   c. Check both plants in one week.

   d. After one week remove the plant in the closet and give it ample sun and water.

6. Discussion Questions:

   a. Why did the plant in the closet get "sick"?

   b. What is the effect caused by the sun's light?

   c. When it was returned to the sunlight, why did it get better?

   d. What causes the appearances of the plants to differ?

7. References:

   a. Spaceship Earth # 1, Metropolitan Detroit Girl Scouts, 153 E. Elizabeth, Detroit, Michigan, 48201

Lower Elementary

Santina Buffone
Darlene Schoolmaster

The Sun is the Source of Energy

1. Concept to be developed: Ecosystem

2. Understanding to be developed: The sun is the basic source of energy for all life in every system.

3. Time: 3 days - day 1 - cover system; minimum sun (over the weekend)
   day 2 - uncover system; maximum sun
   day 3 - observe and discuss

4. Materials:
   a. Ecosystem model from "Model of the Earth" (p. 16)
   b. Black plastic (or opaque garbage bag)
   c. Experience chart of evaporation-condensation cycle (p. 16)
   d. Access to the outdoors

5. Procedure:

   a. Tell the children that we need to discover what caused the condensation cycle to start. We will do this by making one change at a time.

   b. Refer to chart of cycle. Look at this chart and their model. Lead them to see that the sun is the only thing outside this system.

   c. How can we eliminate the sun from influencing our system? Move the model and cover it for the weekend.

   d. Observe the following Monday. Have the children decide if there is more or less condensation than occurred the day the system was built.

   e. Move the model again and uncover it in a position of maximum sun exposure.

   f. Observe condensation; relate and compare to previous days.

6. Discussion Questions:

   a. What makes water evaporate?

   b. Does the evaporation occur without the sun?

   c. What comes from the sun?

   d. Young children will probably say light and heat; tell them these are forms of energy. Thus, the sun provides this energy.

   e. Observe and discuss these processes occurring out of doors.

7. Glossary Additions:

   a. Evaporation — water changing from a liquid to a gaseous state.

   b. Condensation — water changing from a gas to a liquid state.

D. Schoolmaster
S. Buffone

Natural Cycles

1. Concept to be developed: Ecosystem

2. Understanding to be developed: Plants capture sunlight and use it to help them make food and oxygen that people and other animals need in order to live.

3. Time: 1-4 weeks depending on materials selected.

4. Materials: Ecosystem established for Concepts 1 and 2. (Continued)
Seeds, e.i. lettuce or grass (one that will root and grow quickly)
Access to sunlight
Aphids

Ecosystem converted to Terrarium
Ecosystem established for 1 and 2
Plants, e.i. moss, ferns, violets from woods area or nursery.
Meal worms
Beetles, purchased or culture
Pond water

Set Up
Covered 2 gallon jar of distilled water
Vial of pond water or access to sun
Bio scope

Outdoor Plan
Access to outdoor area of birds, insects, plants, etc.
Board
Food for sun

5. Procedures:

a. Begin plant life growth in whichever system used.
b. Observe plant life out doors.
c. Lay a board across an area of grass.
d. View grass under the board several days later
e. Cover a portion of the plant life in the additional systems used so that these plants cannot make use of sunlight For Pond Water: separate a portion of pond water in another container and remove to an area where plants will not have access to the sun.

f. View plants in the system you are using.
g. Introduce animals to eat plant life suggested for system used and/or observe this process outside. For pond water: use a bioscope to view microscopic animals eating algae.

6. Discussion questions:

a. What happened to the grass that was covered?
The pond water in darkness?
The plants that were covered?

b. Why were the plants that were uncovered able to continue growth?

c. What happened to the animals introduced to the closed systems?

d. Why were they able to live?

7. Reference:

Ten Minute Field Trips, Using the School Grounds for Environmental Studies, Helen Ross Russell, Doubleday (Dearborn Professional Library)

Availability of materials -- elementary school --ecosystem, covered jars, bioscope.

Wooded area or field--ferns, moss, violets, pond water.
Pet Store: meal worm culture, aphids, pond water.

A meal culture can be developed as follows in or out of the ecosystems.

air holes

meal worms from pet store
damp sponge

folded burlap

bran

Allow 3-4 weeks for beetles to develop. When beetles are developed, allow them out of the jar into the rest of the ecosystem to begin continuing development in terrarium for ongoing study.

Lower Elementary B. Diane Boyd

Where Lunch Comes From

1. Concept to be developed: Ecosystem

2. Understanding to be developed: Plants capture sunlight and use it to help them make the food and oxygen that people and other animals need in order to live.

3. Time: One hour

4. Materials:

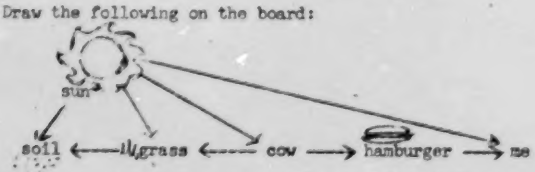
   a. Blackboard
   b. Paper
   c. Pencils and crayons

5. Procedure:

   a. Have the children draw food they eat for lunch.

   b. On the blackboard, write a lunch menu.

   c. Draw the following on the board:



   d. List some of the suggestions from what the children drew (For example: roast beef, chicken, pork chops, etc.).

   e. Point out how each food can be linked back to the soil, plants, and then to the sun's light.

6. Discussion Questions:

   a. Think of your favorite meat.

   b. What animal does it come from?

   c. What does that animal eat? (Almost always some form of plant)

   d. From where do plants obtain their basic needs?

   e. Why do we need the sun's energy in order to get a hamburger?

7. References:

   a. Environmental Learning Experiences for Kindergarten Through Second Grade. Center for the Development of Environmental Curriculum, Ohio Department of Education.

Lower Elementary — Shellie M. Ellison

Simple Food Chain

1. Concept to be developed: Ecosystem

2. Understanding to be developed: Some animals eat other animals which in turn eat plants; some animals (like people) eat both plants and animals.

3. Time: 1 hour

4. Materials:

   a. Felt characters to illustrate the following song (sung to the tune of Six Little Ducks):

Chorus—{One little girl that I once knew,
Went to get the mail in the morning dew.

There by the box was a piece of corn,
Warming and growing in the sunny morn.

(Chorus)

There by the box was a little corn plant,
And chewing on its leaves were a worm and an ant.

(Chorus)

There by the box was the great big hen,
Pecking on that worm and far away from her pen.

(Chorus)

Dreaming of her dinner in a hungry way;
Corn on the cob and chicken souffle.

5. Procedure:

   a. Gather children around and tell them you are going to sing them a story about a little girl who lives on a farm, and what happens by her mailbox.

   b. Using felt characters, sing story to children.

   c. Talk about story with children.

   d. Repeat song, with children joining in.

e. Have children act out story, designating children to play the parts of a:

(1). Mailbox
(2). Girl
(3). Corn seed/plant
(4). Worm
(5). Ant
(6). Chicken
(7). Blades of grass
(8). Sun shining

6. Discussion Questions:

a. Which characters are plants?

b. Which characters are animals?

c. What did the chicken eat?

d. What did the worm eat?

e. What did the girl dream about eating?

f. Who ate plants?

g. Who ate animals?

h. Did anyone eat both?

i. How did the corn plant get there?

j. How do <u>you</u> think the seed got there?

k. What happened to the ant? (Try to get the children to say who would be the ant's predator.)

l. Do you eat plants?

m. Do you eat animals?

Lower Elementary — B. Diane Boyd

Interdependence

1. Concept to be developed: Ecosystem

2. Understanding to be developed: Some animals eat other animals which in turn eat plants; some animals (like people) eat both plants and animals.

3. Time: Approximately 2 hours (with field trip)

4. Materials:

   a. Blackboard
   b. Pencils and paper

5. Procedure:

   a. List the following animals on the board. Write what they eat after asking the children if they know:

Animal	What They Eat
Cows	Plants (grasses)
Rabbits	Plants
Sparrows	Plants (seeds)
Worms	Digest decaying soil
Robins	Animals (worms and insects)
Cats	Animals
Wolves	Animals
Trout	Animals (other fish)
Turtles	Plants and animals (insects)
Humans	Plants and animals

   b. Go outside to a nearby pond, stream, or natural environment. Tell the children to watch what the animals are eating. Tell the children to watch the pond life, land life, and watch the life up in the trees.

   c. Have the children draw pictures of animals and what they eat, either using examples from the board or from what they observed.

6. Discussion Questions:

   a. Which of the living things in your pictures or on the board are able to make their own food (They are called "producers")? How do they do that?

   b. Which of the living things in your pictures or on the board cannot make their own food, but must eat other living things (They are called "consumers")?

c. Do any of the pictured or listed animals eat only plants (They are called "herbivores")? Which ones?

d. Do any of the pictured or listed animals eat only other animals (They are called "carnivores")? Which ones?

e. Which of the pictured or listed animals eat both plants and animals (They are called "omnivores")?

f. Can you think of any animals who might change their eating habits because they are around man?

Lower Elementary — Marlene Decker

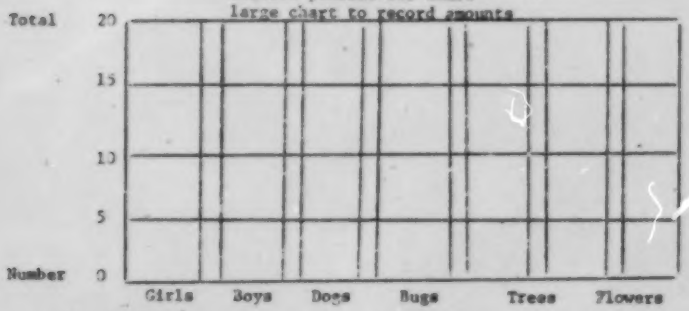
AREA POPULATION STUDY

1. Concept: Population.

2. Understanding to be developed: A population is a group of plants and animals living in the same area.

3. Time: One day of introduction then two weeks, two days a week (not full days for this age group).
   Day 1: Field Trip
   Day 2: Compile data, discuss, chart
   ---Repeat each week---

4. Materials: Local field or large yard
   paper and pencils for trip
   colored pencils for chart
   large chart to record amounts



5. Procedure:

   a. Introduction Day: Look at the other students describe and count them.
   b. Discuss a few differences, stress similarities especially the facts that they are all people, they attend the same school, are in the same grade, etc.
   c. State a simple definition of "population" as stated in the above understanding to be developed.
   d. Before taking the short walk to the nearby field review the concept of population. Then divide into two groups-dog counters and bug counters.
   e. While on the trip the children will count how many bugs or dogs they see and record the number on their own piece of paper. These will be pasted on the classroom chart under the appropriate heading for later use.

5. Procedure - (continued)

   f. On the second day discuss the trip and what was seen, how many animals, different kinds, etc. Record the numbers on the chart and review the idea of population.
   g. Repeat steps d, e, and f, using the same location but counting plants (ex. trees and flowers).

6. Discussion Questions:

   a. What does the boy/girl next to you look like?
   b. How many people are here in the room?
   c. How is he the same/different than you?
   d. Who can tell me what a population is?
   e. What animals did you see on our trip?
   f. How many bugs/dogs were there?
   g. Were the bugs/dogs alike or different?
   h. How many trees/flowers did you see on our trip?
   i. Were the trees/flowers alike or different?
   j. Are trees (flowers, dogs, bugs) a population? Review definition if necessary.

7. Other Activities:

   a. Make a collage of magazine pictures to show other populations. This can be an individual or group activity.
   b. Make a list of other populations in the same field or expand to the city as a base.
   c. Assemble an aquarium showing a fish population. Keep watching and discussing the population and how it changes.

8. References:

Interaction of Man and the Biosphere, Teachers Ed. Rand McNally and Co. Chicago, 1970.

Populations of a Vacant Lot

1. Concept to be developed: Population

2. Understanding to be developed: A population is a group of plants and animals of the same kind living in the same area.

3. Time: 1 day

4. Materials: Film: Life in a Vacant Lot. 10 minutes (interrelationships of organisms living in an urban vacant lot).

5. Procedure:

   a. Introduce and explain the following terms:

      1. urban
      2. lot
      3. animals
      4. nature
      5. air
      6. vacant
      7. community
      8. plants
      9. water
      10. environment

   b. Show film Life in a Vacant Lot, 10 minutes. Discuss why this lot is vacant. Have students identify the different populations living in the vacant lot environment.

   c. Ask students what they think about how the living population of the vacant lot gets its food, water, and air.

   d. Ask students who do they think owns the vacant lot; and what are some ways that the lot could be used by the community.

   e. Have students express their feelings about the vacant lot by drawing a group mural depicting the various populations that they think are living in the lot.

6. Discussion questions:

   a. What does the word 'urban' mean?
   b. What does the word 'nature mean?
   c. What is a vacant lot?
   d. What does the word "population" mean?
   e. Why do living things need water?
   f. Why are there vacant lots in the city?, in the country?

7. Follow-up activity: Have students investigate a neighborhood vacant lot to see what kinds of organisms live there. Have students construct a large mural depicting the vacant lot.

8. References: Life in a Vacant lot, 10 minutes. The University of Michigan, Audio-visual Center, Ann Arbor, Michigan.

Lower Elementary

Judy Rose

A SCHOOLYARD INVESTIGATION

1. Concept to be developed: Population

2. Understanding to be developed: Populations interact with each other and their environment.

3. Time: 3 sessions - session 1 - a story and pictures
   session 2 - examine the schoolyard
   session 3 - discussion and play acting

4. Materials: Insect pictures for the bulletin board
   Two books - Tall Grass Zoo
   The Inch Worm

5. Procedure:

   a. During the first session read one or both of the books suggested. Discuss what is pictured on the bulletin board.

   b. During the second session investigate the schoolyard grass for insects and other organisms you might find there. After your examination of the yard, have the children help you to make a list of the things that you found on the investigation. Record your findings under the following headings:

      Insect Where did it live What was it doing

   c. During the third session discuss the insects and their needs. Let each one of the children choose an insect and dramatize its form of locomotion, eating, habits, life style, etc. For example, some children might build an ant hill with big blocks. Encourage the children to tell how it feels to be their kind of insect.

6. Discussion:

   a. How could the things that live in the grass help each other?

   b. Do you think some of the things in the grass are scared of each other?

   c. What are some of the special needs of the insects in the schoolyard grass?

   d. What are some things that all living things need?

   e. Do people make some problems for the small things living in the grass?

   f. What have we learned about the way insects and other things live together in our schoolyard?

Community

1. Concept to be developed: Population.

2. Understanding to be developed: Populations are part of a given community.

3. Time: 1 day.

4. Materials:

   a. Film: Life in a Garden; 12 minute, color (deals with animal populations in a garden).

   b. Art paper and supplies.

   c. Chart paper and markers.

5. Procedure:

   a. Introduce and discuss the following terms:

1. community	7. food
2. population	8. air
3. animals	9. shelter
4. plants	10. love
5. garden	11. life
6. water	12. nature

   b. Discuss the different members of the garden population. Show film Life in a Garden. Relate to students that the garden is a community and that all the animals and plants are the population of this community.

   c. Have students express what they feel makes up a good population by having them do a group mural depicting a garden community of their own creation and to have a population for it.

   d. Discuss with class, what might have happened if the population of the garden community were to grow. What would happen to available food supply.

   e. Discuss what affects would occur if the garden community were not able to get enough water and sun.

   f. Discuss the affects of love will bring to the garden community.

6. Discussion questions:

   a. What are animals?
   b. What does the word community mean?

c. What does love mean?
d. What is a garden?
e. What is a flower?
f. What does nature mean?
g. What is the population in this class?
h. What is the population in your home?
i. What does food supply mean?
j. What does life mean?
k. What does the word cooperation mean?

7. References: Life in a Garden; 12 minute, color. University of Michigan, Audio-Visual Center, Ann Arbor, Michigan.

Early Elementary — Agnes Corner

Population Needs

1. Concept to be developed: Population

2. Understanding to be developed: Populations are part of a given community.

3. Time: Five days. Day 1 - Discussion of what a "community" and a "population" is.

   Day 2 - Discussion of what a population's need are in order to survive.

   Day 3 - If needs are not met what happens.

   Day 4 - Field trip.

   Day 5 - Speaker.

4. Procedure:

   a. Show slides of population of as many different local animals and plants - if slides not available use books or pictures from magazines. Discuss terms "population" and "community".

   b. Discuss what they themselves need in order to live. Do the same for one familiar animal or plant, realizing our needs are the same.

   c. Now relate to tragic happenings such as fire: spoiling of natural habitat, etc.

   d. Field Trip: Locate within walking distance of school a place set aside for the plants and animals of our community.

   e. Have a D.N.R. person come and speak to the children on what they are doing and what the children can do to help. (Be sure speaker can adapt to age group.)

5. Questions for discussion:

   a. What does fire (or other tragic happening) take from the plants and animals? What must they do to survive?

   b. If a farmer plows the soil and fences the area, where will the plants and animals go?

   c. If the animal is basically a water animal, what must he do if the water is removed?

   d. If a wooded habitat has been cleared for a super highway or a sub-division, what will the animals do?

   e. What can animal populations do that plant population cannot?

   f. What can we do to insure a good habitat for plants and animals in our community?

g. How can we encourage other children to not destroy or molest the plants and animals and their habitats?

6. Additional Activities:

Art: Draw pictures of areas suited for certain animal populations that have abundant plant life.

Language Arts: Role playing. Have the plants and animals talk to a bull-dozer or earth mover about helping to preserve good plant and animal habitats.

View the film: Say Goodbye

Social Studies: Draw map of community designating areas where there is a park or refuge area. Find if one is needed and where. Involve parent and community organizations interested in environmental education. If park or refuge area are or will be available, graphs could be made over a five year span of the number of kinds of populations and the increase or decrease in numbers.

Lower Elementary Kathy Page

What is Water Pollution?

1. Concept to be developed: Population

2. Understanding to be developed: The community is closely interrelated with its environment.

3. Time: 1 day - Discussion and experiment

4. Materials: Pictures of water pollution mounted on poster board
   2 small aquariums
   charcoal filter, aquarium floss & charcoal

5. Procedure:

   a. Using the pictures as a starting point, conduct an open discussion about water pollution. Use the discussion questions as guidelines.

   b. Fill one aquarium with water. Attach a filter so that water is sucked up from one aquarium and filtered into the other.

   c. Put sand into the first aquarium and agitate it until the water's cloudy.

   d. Turn on the filter and afterwards examine the filter and the other aquarium for its contents.

6. Discussion Questions:

   a. Where do we get our water from?

   b. What do we use water for?

   c. What happens to the water after we use it?

   d. What does a sewage treatment plant do?

   e. If we dump sewage into a lake, what might happen to the fish?

   f. What is the 'pollutant' in our experiment?

   g. Who is the 'polluter'?

h. Is the water clear in the second tank?

i. How did we clean up our water?

j. Water is in the filter that make the water clean?

k. Who cleaned up the water?

7. References:

a. McDonald's Ecology Action Pack, McDonalds Corporation. 1972.

b. Energy Conservation - Guidelines for Action, Michigan Association of School Administrators - Region 9. April 1974.

Lower Elementary

SURVEY OF REASONS FOR LIVING IN A COMMUNITY

Dorothea Rooks

1. Concept to be developed: Population

2. Understanding to be developed: The human community is closely interrelated with its environment.

3. Time: 3 days -- day 1 - Background discussion
   day 2 - Send questionnaire home
   day 3 - Discussion of questionnaire results

4. Materials:
   Questionnaire (teacher prepared)

SAMPLE QUESTIONNAIRE

Dear Parents:

We are learning about the community and are making a survey to find out why people come to live here. Please answer the questions below and, if possible, return it tomorrow.

Sincerely,

1. How long have you lived in the community?_____

2. What were your reasons for coming to this community?
   (Circle those that apply)
   a. Employment opportunities
   b. Geographic area
   c. Recreational possibilities
   d. Relatives living in the area
   e. Other

3. How has the community changed in size?_____

4. What effect has this had on the following:
   a. Homes _____
   b. Highways _____
   c. Water supply _____
   d. The amount of pollution _____
   _____

5. Procedure:

   a. Prepare children for the survey by asking the question: Why do you think people choose to live in our community?

   b. Record the ideas presented and explain that we will be able to find the real reasons their parents came here by taking a note home and asking them to fill in the bottom part.

   c. Send questionnaire home to be returned the following day, if possible.

   d. Let the children help tabulate the results of the questionnaires on a large sheet of paper.

6. Discussion Questions:

   a. What did we find was the reason most of your parents came to live in this community? What was next, etc?

   b. Did we find that the community has become larger or smaller?

   c. What were some things that happened because of the change?

   d. What did we learn about the reasons some people choose to live in certain communities?

7. Resources:

   a. Slides of homes, construction, factories, parks, and schools in the community.

   b. Some movies of roads, workmen, etc., during the period of sewer installation in newer areas of the community.

Lower Elementary

Richard B. Wilhite

Pipe Cleaner Technology

1. Concept to be developed: Economics and Technology.

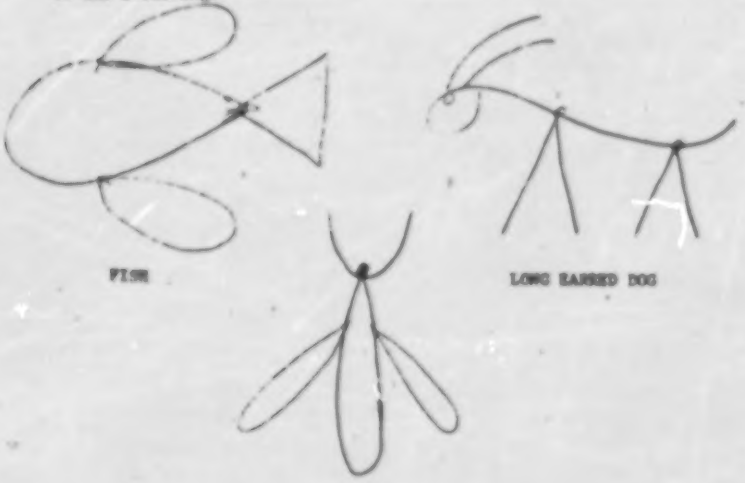
2. Understanding to be developed: In our country, people are generally trained to perform certain types of work. Teachers, farmers, factory workers, conservationists, as well as other workers, all have special jobs to perform.

3. Time: 30 minutes.

4. Materials:

   a. One package of pipe cleaners for each group (see 5a).

   b. A blackboard sketch of the pipe cleaner shape(s) to be constructed, such as the following:



FISH

LONG EARRED DOG

INSECT

Each shape requires that four pipe cleaners be twisted together to make the form, and these shown are about equally difficult.

5. Procedure:

a. Divide the class into groups of five (left over children can be record keepers who will keep a running tally of the number of shapes made by each group over the construction period).

b. Give a package of pipe cleaners to one member of each group - that member will keep the others in his group supplied.

c. Assign construction jobs to the other four members of each group as follows: one head-body shaper, two body appendage shapers, one head appendage or tail fin (fish shape) shaper.

d. Provide a sketch on the blackboard of the shape(s) the teams will be constructing, showing how the four pipe cleaners can be bent and twisted together to make the animal form. You may want to demonstrate how it's done. It's better to assign different shapes to different teams instead of having all teams doing the same thing at once.

e. Construction proceeds like a relay race. The group supplier first gives a pipe cleaner to the head-body shaper. That group member bends his shape, gives it to the first 'body appendage' man, who is then given a pipe cleaner by the supplier for his part, and so on until part by part, the animal form is constructed. At any one time, only one member of the group is working on his part. No helpers, please! When the animal form is completed, the group then starts over again.

f. Over a 5 or 10 minute period, see which group can complete the most of their particular animals. Make a contest of it, and be sure to carefully notice behavior.

6. Discussion Questions:

a. Which team made the most forms of their animal? Which team made the least?

b. Did the "record keepers" (if any) notice why one team made more animals than another?

c. Could any of the teams have made their animals look just right if the head, fins, ears, etc. were missing?

d. Why was it important that each team member do his job well before passing it along to the next member?

e. What would have happened if one team member didn't do anything at all with the pipe cleaner the "supplier" gave him?

f. What would happen if everyone in the world had only one job to do - be a farmer, a teacher, a football player, etc.

g. Ask the children to think of a cookie. How many jobs have to be done before someone can sit down at home and eat a cookie?

Early Elementary — Patricia McKnight

Occupations Related to School Playgrounds

1. Concept to be developed: Economics and Technology

2. Understanding to be developed: In our country, people are generally trained to perform certain types of work. Teachers, farmers, factory workers, conservationists, as well as other workers, all have special jobs to perform.

3. Time: 4 days - day 1 - Study of materials showing variety of developed playground sites, and if possible, visit to such a site.
day 2 - field trip to own playground to discover preferences, problems, suggestions.
day 3 - second field trip to observe older children, observe preferences, ask questions.
day 4 - compile results, finish map showing results.
Additional times needed for interviews of workers will depend upon choices and availability of subjects as discussed below.

4. Materials: Chart paper, construction paper, paints, crayons, felt tips, books, slides (in references), available resource people (custodian, Dept. of Public Works representatives, landscape architect, nurseryman, parents, and others as indicated).

5. Procedure:
   a. Have children leaf through books, such as Lady Allen of Hurtwood, showing developed playgrounds, see slides, visit any nearby park sites to see what things they think make such places inviting and easy to use.

   b. Take first field trip to own school playground. Instruct them to think about:
   1) What they like to do most and where on the playground.
   2) What they like to do least and areas they dislike the most.
   3) What they do not like to see on the playground.
   4) What they would like to add.
   Children can draw pictures showing their answers. They also should draw a map of the playground showing general areas and equipment, circling in color their choices, checking areas needing improvement or to be eliminated. Summarize results with them.

   c. Next field trip to school playground when the older children are playing. Observations of older children's favorite activities and locations can then be added to the map in different colors. Observations should also show which areas are crowded, least used, how different groups come out of the school, go in, and what paths they use. (traffic patterns.)

   d. Day 4 - Make a list on chart paper of result. Discuss how the playground could be improved from all their observations (people, visits, books, etc.)

   e. Have them interview the custodian about his responsibilities, training, concerns. Have them think of how many ways they can help solve some of the playground problems indentified by

working with him (walking on sidewalk instead of across plantins, sweeping gravel off asphalt, putting litter in trash cans, etc.)

f. Interview public works department representative regarding solid waste removal. What are their responsibilities? What do they do with the waste? What training do they need? What are their special problems?

g. Interview a landscape architect or a public works nurseryman about their work, training, ideas about public school recreation areas.

h. Interview city waste disposal officials and/or water treatment experts regarding waste disposal, their jobs, training problems.

i. Interview principal regarding his job, training, problems in regard to playground equipment, safety of children. Discuss their findings and suggestions with him. Before the interview, help children compile list of things they can do to assist in improving the playground. Encourage them to decide on a special project with an alternative that interests them. Discuss expert help they may need to accomplish project.

From here on, follow-up activities and project can involve many more kinds of expertise, which will help them gain an understanding of a variety of occupations, and the training involved.

j. Throughout the activities, whenever, parents expertise and experience can be utilized to demonstrate the concept of course it should be included.

6. Questions to be asked when interviewing workers.
   a. What kidd of work do you do?
   b. Is it indoors or out? Do you travel on your job?
   c. Do you use your hands and body a lot? Or is it mostly working with ideas?
   d. Do you work with people or mostly alone?
   e. What kidd of training do you need to do your job?
   f. What things did you learn in school that helped you with your work?
   g. What tools do you use?
   h. What hours do you work? Do you decide what these hours are?
   i. What do you like about your work? What do you dislike?
   j. What are the special problems you find in doing your work?
   k. Why did you choose this kind of work?
   l. What do you do for fun and to relax?

7. References:
   a. Ten Minute Field Trips by Helen Ross Russell, J.G. Ferguson Publishing Company, 1973, Chicago Illinois.

   b. Science in City and Suburb, staff of Current Science, American Education Publications Unit Book, 1969.

Lower Elementary

Shellie M. Ellison
Patrick A. Miljour

Family Economics

1. Concept to be developed: Economics & Technology.

2. Understanding to be developed: The food most people eat, clothes they wear, and the homes they live in are paid for by money they earn from doing their jobs.

3. Time: 3 days - Day 1 - set-up, introduction.
   Day 2 - break children into groups to role play a family unit.
   Day 3 - actual role playing, discussion.

4. Materials: 3 Large packing boxes, poster paint, brushes, newspaper, masking tape, large store signs (Grocery, Clothing, Bank), money tokens, empty food cartons, paper bags, catalog pictures of clothing.

5. Procedure:
   a. Teacher will prepare the packing boxes to be used as stores (storefronts).
   b. Children will paint them.
   c. Teacher will assemble them, put on store signs, and stock stores, putting prices on items.
   d. Gather children around you and use first set of discussion questions.
   e. Break students into groups to role play a family unit consisting of 2 parents and 2-3 children.
   f. Children discuss in groups what their family needs to buy. (Remind them about making house or rent payments).
   g. Set up 3 children as storekeepers.
   h. Wage earners of family go to bank to receive salary. (For the first session all families will recieve the same income). ex: Factory worker will receive 10 tokens per family.
   i. Family groups go through stores and bank to make necessary payments and purchases. (Teacher will move around room seeing what children bought and giving necessary supervision).
   j. Get back into large group and use second set of discussion questions.
   k. Variations:
      1) Use varying professions with comparable pay scales.
      2) Vary the number of family members.
      3) Extend the concept by actually "selling" items at the store.

6. Discussion Questions:
   a. Day 2:
      1) Everyone needs food. Why?
      2) Everyone needs clothing. Why?
      3) Everyone needs shelter. Why?
         (homes)
      4) Where do you get these:
      5) How do you get them? (Pay for them)
      6) How do you get money to pay for these needs? (jobs)
      7) Do you think all jobs pay the same amount of money?
      8) What jobs do you think pay a lot of money? Not much money?

b. Day 3:
   1) Did everyone make payments for their homes?
   2) What kinds of food did you buy?
      a. meats
      b. milk
      c. fruits & vegetables
      d. bread
   3) What kind of clothes did you buy? (consider the season)
   4) Did you have enough money to buy the things you need?
   5) Did you have any money left over?
   6) If so, what could you do with it?
   7) How do most people get the food they eat, clothes they wear, and homes they live in?

Lower Elementary Richard H. Willhite

Life and Work

1. Concept to be developed: Economics and Technology

2. Understanding to be developed. The food most people eat, clothes they wear and homes they live in are paid for by the money they earn from doing their jobs.

3. Time: 60 minutes.

4. Materials:

   a. Introductory statement: Nobody could live very long without food to eat and shelter from the weather. There is a long chain of people between the food and shelter we need and the earth where these things come from. Each person in this chain works at jobs that help other people get the things they need or just want to have. Each person helps by working at his job. He trades his work for money which the other people give him for working, and he uses the money to buy things for himself. When we spend money, we are actually trading it for some kind of work which someone has done for us to get the things we need and want.

   b. Blackboard and chalk.

   c. Colored construction paper and scissors for each student.

   d. One large sheet of poster paper.

   e. Cellophane tape.

5. Procedure:

   a. Present introductory statement.

   b. Tape the poster paper to black board.

   c. Have each student divide his construction paper in half, trace a human figure on each half, and cut the figures out. These will represent workers and buyers in the chain from food consumption to food production.

   d. Ask class members to name one of the foods they ate at their last meal, and list these on the blackboard.

   e. From this list, select one food mentioned three or more times.

f. On the right-hand end of the poster, tape a paper human figure to represent the person who ate the food selected.

g. From there, ask the students to think of who sold them (their parents) the food. The student who names "grocer" can place one of his paper figures to the left of the consumer on the poster. Label that figure "grocer".

h. Soon, someone will mention "farmer" and that paper figure can be linked to the left of the previous figure. The figures may have to be shifted around as more and more "middle men" are though of.

i. Ask leading questions to help the chain grow:

1. Who helps the farmer get the food he grows to the grocery stores we buy it from (truck driver, field laborers, whole-saler, etc.)?

2. Who helps the store owner get the food ready for you to buy (baker, canner, butcher, dairyman, bottler, more truck drivers, etc.)?

3. Who does the store owner pay to keep his store running (stockboy, cashier, janitor, meat packer, etc.)?

4. Who pays your parents so that they can buy the food?

j. Stop the chain's growth when the poster gets too crowded, or when the students finally run out of answers (not likely).

k. Try other kinds of "producer-consumer" chains (such as houses, clothes, cars, televisions, etc.).

6. Discussion questions:

a. When someone goes to the grocery store, are they paying for just the food alone?

b. How do people in the middle of the chain pay for the food they need?

c. Does the farmer have to pay anyone for the food he needs?

d. Why do people go to work?

e. Do (other) animals have to work to get the food and shelter they need? What kinds of food do animals eat?

f. What are some other things besides food that people work for so they can buy them? Are there some things that are free?

g. Think of other things you use at home. Would some chains be shorter than others, between the person who makes something and the person who finally uses it?

Lower Elementary Richard H. Willhite

Business, Needs, and Desires

1. Concept to be developed: Economics and Technology

2. Understanding to be developed: Industries and business sell some things that people want and need: and encourage people to buy some things that factories have made, but people don't really need.

3. Time: 60 minutes.

4. Materials:

   a. Two large sheets of poster paper.
   b. Old magazines (womens', travel, hobby, news, etc.).
   c. Scissors for each student.
   d. Cellophane tape.

5. Procedure:

   a. Tape the sheets of poster paper on opposite sides of the room or at opposite ends of the blackboard.

   b. Place the magazines at a central location in the room.

   c. Ask the students to imagine themselves as adults. Explain that on one sheet of poster paper they will tape pictures cut from the magazines which show things that they would like to have if they could as adults.

   d. Explain to the students that on the second sheet of poster paper they will tape pictures which show things that they will have to have as adults in order to live.

   e. Allow the students time to look through the magazines and make their choices, so that two collages are formed: perceived actual needs on the one hand and perceived desires for adulthood on the other.

6. Discussion Questions:

   a. Do the two posters show similar pictures?

   b. Why do you feel you need those things on the "needs" poster?

   c. If you could really do without those things on the other poster, why did you choose them?

   d. Does everyone agree about the things they would need to have in order to live? Why or why not?

e. Are there some pictures on one poster that could be put on the other poster? Why or why not?

f. If you had to make a choice of five "needed" things, which five things would you choose?

g. Which of the things on the "want to have if you could" poster use electricity?

h. Electricity in peoples' homes has only been common for about the last 70 years. Which things on both posters could only work if your home had electricity?

i. If you couldn't get electricity, could you still live without the things you chose?

j. How did you first find out about the things you chose (parents, friends, T.V., etc.)

k. How do other people in the world survive without the "need" things you chose?

l. Ask your parents to give you the names of five things they'd like to have but don't have now.

m. Why don't they have those things?

n. Why do businesses tell people about things that they don't have money enough to buy?

o. Why do businesses try to sell people things that they don't need to live?

p. Is it fair to try to sell people things that they don't need to buy? Why or why not?

Choices Within a Token Economy

1. Concept to be developed: Economics and Technology

2. Understanding to be developed: Not all people have enough money to buy all the things they need, want, or are encouraged to buy.

3. Time: 1 day -- initial discussion.
running economy concurrent with other daily activities.
concluding discussion.

The activity could be carried on for several days.

4. Materials:
   a. Token "money".
   b. Tasks to perform, each assigned a token value.
   c. Goods and services to purchase, each assigned a token value. (These choices should range from essential classroom needs to things that would be equivalent to absolute "luxuries.")

5. Procedure:

   a. Set compensation rate for performing specific jobs and assignments for the day. (See reference section.)

   b. Set "prices" on goods and services in the classroom. There should be goods and services available that fall into three categories: (See reference section.)

      1. Essentials: desk space, pencils, paper, etc.
      2. Needs, but not absolute basics: going to the library, etc.
      3. "Luxuries". Available candy, unique games, toys, "paying" someone else to put away paint.

   c. The teacher must attempt to "advertise" and make some of the items very appealing, especially those that do not fall into the "need" category. (See reference section.)

   d. The compensation for the jobs and assignments and the amount needed for purchasing wants and needs must be set in such a way that almost every child would have to set some priorities and make some decisions.

   e. The token economy can then be run for any desired amount of time and can run concurrent with other curricular areas.

6. Discussion Questions:

   a. How did we earn the tokens?

   b. Did everyone have the same number of tokens?

   c. Could everyone buy all the available goods and services?

d. Could everyone purchase the same number of things?

e. Did everyone have to make some choices?

f. How did you choose?

f. Did something make choosing harder? Where some items harder to not choose than others?

References:

a. Compensation for tasks might be set as follows:

1. Math page: 3 tokens (all correct: 2 additional tokens.)
2. Handwriting: 4 tokens.
3. Art activity: 3 tokens.
4. Reading: 5 tokens.
5. Reporting to group: 3 tokens.

Thus, the more efficiently a student is able to work the more he will earn. Tokens could also be offered for helping another child, participating in a group discussion, etc.

b. Items can be priced in the following manner:

1. Desk space: 1 token.
2. One pencil and 2 pieces of paper: 1 token.
3. Drink of water: 1 token.
4. Library for 15 minutes: 3 tokens
5. Candy bar: 3 tokens.
6. Checkers: 3 tokens

Any material or activity or choice that is part of your regular classroom operation can be put into this economy.

c. The "advertising" done by the teacher should attempt to simulate the kind that urges people to make purchases: signs; commenting about how good the candy is; how much the children will enjoy the new game; mentioning all the new books and magazines that are in the library; saying how much easier it is when you have someone else wash the paint brushes for you.

Lower Elementary — Richard H. Willhite

Rich and Poor

1. Concept to be developed: Economics and Technology

2. Understanding to be developed: Not all people have enough money to buy all the things they need, want, or are encouraged to buy.

3. Time: 60 minutes

4. Materials:

   a. Bag of cookies, with enough for each student to have only one cookie.
   b. Flat tray to hold the cookies.
   c. Box of flat toothpicks.
   d. Empty milk carton.
   e. Shoebox or similar-sized container.
   f. Crayon or pencil for each student.
   g. Scissors, one pair only or one pair for each student according to grade level (see below).

5. Procedure:

   a. Have the students cut out equal-sized slips of paper such as can be used for a random name drawing.

   b. Have each student write his or her name on his slip of paper.

   c. Place all the names in the shoebox, and hold a drawing.

   d. The first name drawn receives three toothpicks from the teacher. The second name drawn receives one toothpick, the third name three, the fourth one, and so on in an alternating 3 - 1, 3 - 1 pattern until one-half of the class holds three toothpicks apiece and the other half receives only one apiece.

   e. Dump the cookies onto the tray.

   f. Place the milk carton near the tray.

   g. Explain to the students that they can now use their toothpicks as money to buy cookies. They pay for cookies by going up to the tray and dropping their toothpicks into the milk carton. Cookies cost one toothpick apiece.

   h. Hold another name drawing to determine who goes up first, second, third, etc.

i. Allow the students one at a time to buy cookies until the pile is exhausted. In the end, some students will have three cookies, some will only have one, and the rest will have none at all.

j. Give them a few minutes to eat their cookies and freely discuss their feelings with one another.

6. Discussion Questions:

a. How did it feel to be someone able to buy three cookies?

b. How did it feel to have only one?

c. How did you feel if you got left out completely?

d. If you got left out, or only got one cookie, did you feel cheated? Why?

e. If you got three cookies, did you feel better than the others who got less? Why or why not?

f. How do people usually get the money they need to pay for things with?

g. Why do some people get more money than others?

h. Are all jobs just as hard to do?

i. How would you feel if you needed $100 to buy medicine for your family, and your job only paid $25?

j. Does everybody have enough money to buy the food, clothes, and medicine they need to stay healthy? Why or why not?

k. What do poor people do when they can't get enough money to buy the things their families need and want?

l. What would it be like to never have enough food to eat?

m. Most of the people in the world are poor. Why is this?

Lower Elementary — Margaret O. Stockton

Outdoor School Beautification

1. CONCEPT: Environmental Decisions
2. UNDERSTANDING: To make a decision is to make a choice.
3. TIME: Two weeks.
4. MATERIALS NEEDED:
   a. 12"x18" drawing paper with an outline sketch of the school building.
   b. crayons
   c. pencils
   d. erasers
   e. chart paper
   f. catalogues of seeds and flowers
   g. scissors
   h. paste
5. PROCEDURE:
   a. Take the class on a field trip to the Dow Gardens.
   b. Based on field trip, list on chart paper all of the plants, flowers, etc. seen on the field trip.
   c. Go outside and tour the school grounds.
   d. Based on tour identify ways of improving the outside appearance of the elementary school. List these choices on the chart board, (i.e., trees, flowers trash containers, etc.).
   e. Go back outside, spread out, and with the 12"x18" sketched in school drawing have each child add their choice of way to beautify the site. Give each child the choice of drawing or pasting or both the flowers, trees, shrubs on to the drawing paper.

f. Return to the classroom and have a class discussion of ways that the building could be improved. Ask if anyone wishes to share their pictures an ideas.

g. Through out the class discussion, list on the chart board the ways to beautify the site, resource people to have speak, other field trips that might be taken that would help in doing this project.

h. Choose a way that you wish to work on improving the site.

i. This list will be sent to the principal and to the Title I Director for discussion, evaluation, and approval.

6. DISCUSSION QUESTIONS:

a. How can we improve the looks of our school building grounds?

b. What kind of soil do we have on our site?

c. What types of seeds would grow best?

d. How long would it take the seeds to grow?

e. For what period of time would these plants grow?

f. What can be planted so that there is a continuous cycle?

g. What can be planted for free, (i.e., state supplied, greenhouse, free donations)?

h. What would we need to purchase?

i. What would the approximate cost by?

j. Who will maintain our plants?

k. How can this beautification program be set up to be a continuous project from one year to another?

7. REFERENCES:

a. Department of Natural Resources

b. Greenhouse

c. Dow Gardens

d. Seed and Garden Catalogues

e. Science Co-ordinator

Lower Elementary — Glen Erickson

Choosing Before Deciding

1. Concept to be developed: Environmental Decisions
2. Understanding to be developed: To make a decision is to make a choice.
3. Time: 1 hour
4. Materials: Pencil and paper
5. Procedure:
   a. At the beginning of a week, explain to the class that they are going to write, draw, or discuss what they did over the weekend.
   b. Have the children draw pictures and/or write about 3 activities they did over the weekend that they decided to do themselves (they made the decision to do it).
   c. After each child has completed their drawing and/or description of the 3 activities, ask them to think about why they decided to do what they did. For instance, maybe one child decided to go to the nearby grocery store to buy some candy because his friends were going to the store too.
   d. Now have them add their reasons to their descriptions either by writing them down or emphasizing their reason(s) in their drawing. For instance, the child who went to the store could include his friends in the picture and have them pointing to the grocery store.
   e. After they have included their reasons in their descriptions, ask the children to list or include in their drawings all the possible activities they could have done instead of, for instance, going to the grocery store to buy candy.
   f. Now have the children share their experiences and their reasons and their possible choices they didn't choose with the rest of the class. The teacher could write or sketch different children's activities on the board and let the class see if they can come up with other possible activities the student might have chosen (considering money involved, whether other people were necessary to do activity, parental consent, desire, etc.).
   g. This activity could be used in other situations such as:
      (1). How did you get to school today and why?
      (2). What activities did the class do in the morning, and why did the teacher or the class or both decide on those activities over other possible activities?

(3). What did your class do during recess today? What choices did you have and why did you decide on doing what you did?

6. Discussion Questions:

a. Did you decide on doing what you did because your friends wanted to do it also?

b. Did you do something you have done many times before, or did you do something new?

c. Was money a reason for doing or not doing something? How was money a part of your decision?

d. Did you think of all the choices you listed, as things you could have done but didn't, when you decided to do what you did?

e. Example: Suppose a child decided by himself or herself to go to bed early. You might ask him:

(1). Were you tired?

(2). Was there nothing else to do, like watching television, playing a game, or helping someone do something?

(3). Were you planning on something the next morning that you wanted to get a lot of sleep for, like going somewhere exciting, school, or you just like to get up early even when you don't have something planned?

(4). Does any child ever decide to go to bed early without being told because they chose to?

f. Do you often, sometimes, almost never think about several things to do before you decide on one thing to do?

Early Elementary — Patricia McKnight

Creating a Democratic Environment in the Classroom

1. Concept to be developed: Environmental Decisions

2. Understanding to be developed: A decision can be made by one person or by a group of people such as a family or a class.

3. Time: 4 days - day 1 - Discussion of school living situation; individual expectations and preferences of process.
   day 2 - Role playing of learning situations.
   day 3 - Play Common Squares and discuss reactions.
   day 4 - Discuss and then define process by group agreement for activities in the classroom.

4. Materials: chart paper, felt tip pens, Common Square puzzles, pencil, paper.

5. Procedure and Discussion Questions:
   a. Day 1. Questions to raise: Aim for increased self-awareness. The discussion goal is to decide how to live together.
      1) What do we do in first grade?
      2) What do you want to learn?
      3) How will this happen? Will we do it in groups, or one at a time with the teacher?
      4) Do you like to talk when you work?
      5) Do you like to have people talk to you?
      6) Do you care if you have to stop what you are doing?
      7) Do you like to be near someone when you are working, or would you rather be alone?
      8) If someone has a question or a problem, and the teacher is busy, what should he or she do?
      9) We all must share some of the same things in the room. How shall we use these?
      10) What should we do if we finish our work, and some others are still working?
   b. Day 2. Role playing in typical situation: You have drawn a picture and are ready to tell the teacher the story about the picture. Who would like to do this? Pick five children who will take the parts of a child in this situation. Choose another to be the teacher. Ask them to act out this situation.
      1) Questions to raise:
         a) How well did it go?
         b) How did you feel?
         c) Could you do what you wanted to do? Tell how. If not, tell why not.
         d) How did it make you feel? Did you get mad?
         e) How do you think it might work better, or was it all right this way?
      2) Now role play the same situation again with other children taking the parts. Point out before they begin that they and all of us may have learned something from watching the others that we didn't know before. After the second time, discuss results as before. Also ask, is it the same way we did things the first time? How is it different?

3) Using chart paper, write the suggestions the children have about how they would like to function in the classroom, and how they will share things we all use in common.

c. Day 3 - Play Common Squares. (described in Book 5, Skill Activities)
1) Introduce the game. Tell the rules.
No talking. No face or hand signs showing how you feel, what you want to do, or want them to do. You may not touch the other players' puzzle parts. All squares will be the same size when completed. Monitors can be the children who are left over after forming groups of five.
2) Debrief. Questions may be:
a) How did you feel?
b) How did you feel when someone else finished first?
c) Did you think that those who were stuck were dumb?
d) When you were finished with your square, did you want to stop?
e) What did most everyone in the square have to do before all the squares could be finished?
f) Do we do anything like this with other things in the classroom?
g) What did you learn about yourself?
3) Read over with the children the things they dictated to you the previous day about how they wanted to live in the classroom. Do they want to make any changes? Any additions?

d. Day 4 - Review with the children what they have decided so far about how they want to function in the classroom (process) Then tell them you will write for them again the rules they want to follow. Urge them to make as few as possible, and help them to generalize if necessary. This can be done by asking them questions when they repeat procedures. Post them where they think they will be the most useful. It is valuable, and satisfying to them to ask someone each day to read the procedures to the class when work is about to begin.
1) Culminating questions: These are to help the children understand clearly the process they have evolved, and the reasons for it
a) You have decided some ways to act when we work together. Does it work best for each of us to decide how to work for himself, or to decide together how to work and live together?
b) Why do you think so?
c) What about the things we share? How do you feel about it the way you chose to use them?

6. Follow-up Activities.
a. Using the same procedure, ask them to create rules for using the playground and equipment. Remind them of possible situations such as: choosing teams, wanting the same toy, getting hurt, etc.
b. Again using the same process, they can decide how to accomodate visitors in the classroom. (Role playing is good here)

7. Reference:
Values and Teaching, Louis E. Raths, Merrill Harmin, Sidney B. Simon, 1966, Charles E. Merrill Publishing Co., Columbus, Ohio.

Lower Elementary

Margaret O. Stockton

Indoor School Beautification

1. Concept to be developed: Environmental Decisions

2. Understanding to be developed: A decision can be made by one person or by a group of people such as a family or class.

3. Time: One week.

4. Materials:

   a. Manuscript paper
   b. Pencils and erasers
   c. Chart paper
   d. Barrel (trash)
   e. Enamel paint
   f. Sponges
   g. Paint remover

5. Procedure:

   a. Tour the inside of the school building, halls, bathrooms.

   b. Based on the tour identify ways of improving the inside appearance of the elementary school.

   c. List ways that the class can improve the inside appearance.

   d. Choose two ways that the class together could improve the general inside appearance.

   e. Send the two choices to the principal for discussion, evaluation, and approval.

6. Discussion Questions:

   a. How can we improve the appearance inside of the elementary building?

   b. What would be some projects that would best serve the entire school?

   c. What would be needed to do this project?

   d. What would the project cost?

   e. How would we go about obtaining the materials?

   f. Who would maintain the project?

   g. Who was the decision-maker for the project? Could you have made that decision all by yourself? Why did we have to take our plan to the principal?

Basic Human Needs

1. Concept to be developed: Environmental Ethics

2. Understanding to be developed: Children all over the world have similar basic needs.

3. Time: 5 days

4. Materials needed: Chart paper, films, old magazines, library books, art paper, crayons, scissors, and paste.

5. Format for conducting activity:

   a. First day

      1) Establish that everyone needs things everyday to sustain life.
      2) Generate a possible listing of essential things you need. Put on chalkboard as children name.
      3) Discuss what would happen if _____(name one item) would be removed. Erase. Could you manage without it? Eliminate to basic needs.
      4) Make a permanent chart.

Basic Needs				
Air	Water	Food	Shelter	Clothing

   b. Second day

      1) Discussion: Do children everywhere have the same basic needs? Let's find out.
      2). Show film: Arabian Children (EBE, 1954, 15 min.)
      3) Discussion of film: Life style, customs, etc.
      4) Make a chart for the children in the film.
      5) Discussion questions:

         a) What were the things those children needed?
         b) Why didn't they have the things you have?
         c) Do they have the same basic needs?

      6) Mark the area studied on a globe or world map.

7) Activities:

a) Draw a picture of something from the film - type of food, clothing, shelter, etc.
b) Get library books and/or magazines pertaining to the area discussed to share with the other children.
c) Make a page for a book to be completed at the end of this unit.
d) Cut out pictures that show examples of lifestyle.

c. Third day

1) Show film: Tuktu and His New Clothes (NFBC, FL, 1969, 14 min.)
and
Tuktu and The Snow Palace (NFBC, FL, 1969, 14 min.)
2) Follow the procedure in 6., 3) - 7).

d. Fourth day

1) Show film: South Pacific Island Children (EBE, 1951, 11 min.)
2) Follow the procedure in 6., 3) - 7).

e. Fifth day

1) Comparison of charts of all four geographical areas studied.
2) Sharing of individual books.
3) Possibly compiling books for each area with excess pages for classroom books.

Lower Elementary

Talbert B. Spence

Basic Needs of all Living Things

1. Concept to be developed: Environmental Ethics

2. Understanding to be developed: Children all over the world have similar basic needs.

3. Time: 3 days.

4. Materials:

   a. Chart paper and magic markers.
   b. Art paper and colored chalk and crayons.
   c. Cassette tape recorder.
   d. Cassette tape with the following emotional sound responses.

1. approval	6. happiness
2. disapproval	7. sadness
3. anger	8. fear
4. joy	9. persuasion
5. disappointment	10. excitement

   e. It is important to allow about a minute pause after each emotional response (*see (b) procedures).

5. Procedure:

   a. Introduce to class: Today we are going to listen to some sounds made by a group of people expressing a feeling or emotion. We are going to listen to see if we can learn what feelings and emotions are being expressed.

   b. Play cassette tape of the sounds to the class, while the students are attempting to identify each sound -- record each emotion or feeling, identified on chart paper; but only do this after each pause-when you ask the class for their comments and suggested answers.

   c. After hearing the whole tape and have recorded on chart paper all the sounds of feelings and emotions, discuss - how living things (humans) have a basic need to express their emotions and feelings.

   d. Ask the class to express on art paper individual examples of a feeling or emotion that they have a need to express.

   e. At the completion of the art project have individual students explain and describe to the class briefly the feeling or emotion they drew and why.

f. Have students discuss what the following terms mean to them.

1. air
2. food
3. water
4. a place to live
5. love

g. Discuss, (after recording on chart paper the class overall statement for terms in (f)) the relationship these terms might have with the feelings and emotions on the chart paper, recorded from the tape.

h. Ask students if they know why each of the basic every day needs are important.

i. As an experiment to investigate and prove that living things need air, have a group of students demonstrate this by holding their breath until the body forces them to breathe. Possibly to enhance this understand ng have students observe a fish tank with an air pump going and one without an air pump - have students give their interpretations as to what might happen if the tank with the air pump stopped - vs. - fish tank without air pump.

j. Discuss with class how living things recognize the need for food. Ask students how do they know when they need food?

k. Before expressing how living things need water, have each student eat a few soda crackers. Do not allow any student water fountain privileges and see how long it takes them to become agitated. When enough have expressed a need for water, ask the class how they think a living thing needs water.

l. Have students tell some of the places animals live; record responses on chart paper. Ask if there are some special places people live.

m. Have students express what love means by drawing a picture which has the following components in it:

1. need for water
2. need for air
3. need for food.
4. need for a place to live.

6. Discussion questions:

a. What is an emotion?
b. What is a feeling?
c. What is joy?
d. What is love?
e. What is sadness?
f. What living things need air to live?
g. What living thing needs food and water to live?
h. Do you need food, water, air, a place to live and love daily?
i. What is fear?
j. Anger means what to you?

7. Suggested follow-up activities:

   a. Experiment: have groups of students plant a few bean seeds in flower pots of a flower box - an equal number of seeds per pot/box. Provide adequate light and water. Ask students to explain why there is a difference in growth, considering the fact that the plants in both pots/boxes started out the same.

   b. Outdoor activity: divide class into small groups to discover something which is taking in nourishment, e.g., bird, ant other insects which may be eating or carrying something to eat. Have the groups discuss how a plant growing through a crack in the sidewalk get its nourishment.

   c. Have students select several healthy plants from experiment (a). Divide the plants into two groups. Water one group and do not water the other. Have students observe and note the different ways ways in which unwatered plants show their need for moisture.

   d. Have students design a large mural depicting all the various concepts or terms discussed throughout the activity., e.g., show fear, love, need for food, happiness, sadness,etc.

8. References:

S. E. E. Self, Earth, Ethic, by John W. Wart and Jessie M. Turner. (laboratory experiments).

Natural Giving and Sharing

1. Concept to be developed: Environmental Ethics

2. Understanding to be developed: Every individual has something which he gives and which he receives from society.

3. Time: Approximately two weeks.

4. Materials: Construction paper, scissors, glue, straight pins/ masking tape, markers, and cotton.

5. Procedure:

   a. Present the story "The Warm Fuzzies". (See #7 Reference).

   b. Conduct a discussion on student feelings about "Fuzzies" and the desirability of experimenting with interaction.

   c. Each student constructs a "Fuzzy" of his own, in the shape of an envelope, and fills it with cotton.

   d. Pin the completed "Fuzzy" holder on each child, making sure it is readily accessible to him.

   e. Each student will hand out a "Fuzzy" while extending a friendly greeting to another.

   f. Bring the class together for a debriefing before discussion questions.

6. Discussion questions:

   a. Why should we be nice to people?
   b. Should we be nice to people?
   c. How do you feel when someone is nice to you?
   d. Can you give examples of this?
   e. How do you feel when someone is unkind to you?
   f. Can you give examples of this?
   g. Do you think everyone should be nice to everyone else?
   h. Do you think it's important to think of other people's feelings?
   i. Do you believe that if you are nice to someone, that person will be nice to you?
   j. What would the world be like if no one was nice to one another? Or if everyone thought only of themselves?

7. References: "The Warm Fuzzies" story origin unknown.

"The Warm Fuzzies" is a story about mythical creatures who extend good feelings by greeting the people they meet and bestowing on each a "warm fuzzy" from the bag draped over their shoulder. All is well, and everyone feels good about themselves until the mean old troll shatters the calm atmosphere. The troll tells the little creatures that they should not dole out the "warm fuzzies" too freely for fear they will be depleted. Soon the creatures become stingy with their friendly greetings and begin to hoard their "fuzzies". The troll begins to hand out "cold pricklies", in place of the creatures' "warm fuzzies", and the people become depressed over the terrible feelings they now experience. Very shortly the mythical creatures realize how unhappy they have become and return to their previous occupation of handing out "warm fuzzies".

Lower Elementary — Talbert Spence

Responsibility

1. Concept to be developed: Environmental ethics

2. Understanding to be developed: Every individual has something which he gives and which he receives from society.

3. Time: Several days.

4. Materials needed:

   a. Felt board and letters.
   b. Teacher selected popular children's stories that reflect cooperation and understanding.
   c. Crayons and paper.
   d. Tape cassette recorder.
   e. Chart paper and magic markers.

5. Recommended procedure:

   a. Using a series of pictures which show people cooperating and understanding, have the students give their interpretations of what is happening in each picture. The teacher should either record their responses on the tape recorder or place them on chart paper so everyone can see them.

      (e.g. child hugging brother or sister,
      mother caring for sick child,
      children watching animals in their natural habitats, etc.)

      Note: (depending on age level of group this activity should be altered to meet the uniqueness of the classroom situation)

   b. Giving each student paper and crayons ask them to draw how they feel about some member of their community.

   c. After the students have completed their interpretive drawings, group the children into teams of 4 to 5 students. Have each team come up to the front of the room and tell the rest of the class about their pictures.

   d. At the completion of the group presentations have each student hang their drawings on the walls in the classroom; have students remain in their groups and the teacher will ask them to give their interpretations about the word Responsibility printed out in bold colors on the felt board.

e. Discuss what Responsibility means and record all responses on the black board or on chart paper. Showing the pictures used initially discuss how responsibility is related to the pictures.

6. Discussion questions:

a. Ask students: What does responsibility mean to you?

b. Do you feel that people in the class should act in ways that make living more pleasant for others?

c. In what ways do you show responsibility?

d. How important do you think it is to develop and keep a sense of responsibility?

e. Can you think of ways that you can show responsibility in your daily living?

Note: Here it is possible to have the students express their answers in the form of a group mural. The use of visual interpretation might enhance concept development at this point.

f. If you plan to make any changes in the way you act towards others, please say what changes you will make.

g. If you plan not to make any changes in the way you act towards others, please state why not.

Note: It might be easier to achieve the total point of this exercise if the teacher would ask each group of children to express their answers in the form of a role play.

7. Follow up activities:

a. Have students cut out pictures from magazines that reflect a sense of responsibility (a human ethic of love and understanding.)

b. Might have class put on a presentation to the rest of school on the theme of Responsibility (a human ethic of cooperation and love.)

c. Have students talk about their feelings about responsibility in terms of their actions towards fellow classmates, family and nature.

d. Take students on field trip in the community to make a visual assessment of how they and their neighbors are showing responsibility towards the maintenance of a good visual appeal for their neighborhood.

Section II

Lower Elementary Skill Developing Activities

69/70

SECTION II

Introduction to Skill Developing Activities

The development of problem solving skills is essential if students are going to actively participate in environmental problem solving as responsible citizens.

Eight skills have been identified as being essential to the environmental problem solving process and for each of the eight skills, skill developing activities have been designed for each of the following grade categories: early elementary (K-2); middle elementary (3-4); upper elementary (5-6); junior high; and senior high.

The eight problem solving skills are the ability to:

1. listen with comprehension;
2. recognize environmental problems;
3. define environmental problems;
4. collect information;
5. organize information;
6. analyze information;
7. generate alternative solutions; and
8. develop a plan of action.

After becoming acquainted with the following skill developing activities, you may want to develop some of your own, keeping in mind that they should be designed to be integrated into and coordinated with your existing curriculum rather than be used as units by themselves.

-71-/72

Lower Elementary

Ronald Garner
David Sandys
Richard Sandys
James Chenoux

Count Nature

1. Skill areas to be developed:

   a. The ability to collect data.

2. Time involved: 30 minutes.

3. Material needed: Count list.

   a. How many pine needles on one hand's width of a branch?

   b. How many petals on a dandelion flower?

   c. How many points on a maple leaf?

   d. How many legs on a spider?

   e. How many bird's nests in the trees?

   f. How many bears in the area?

   g. How many blades of grass in one shoe length by one shoe length?

   h. How many dead leaves under a tree?

   i. How many ants leaving and entering an ant hill?

   j. How many pretty rocks and how many ugly rocks are there?

   k. How many clouds are there in the sky?

4. Recommended procedure:

   a. Pass out count list and explain it.

   b. Define area in which count is to take place.

   c. Go out and make count.

   d. Compare results and discuss natures patterns.

5. Discussion questions:

   a. Are there things in nature that are difficult to count? Why?

   b. Are there some things on your list that you did not find? Why?

   c. How is nature pretty, ugly, organized and/or disorganized?

Lower Elementary

David C. Sandys
Richard B. Sandys
James D. Chenevur
Ann Gardner

The Spot Game

1. Skill area to be developed:

   a. The ability to collect data.

2. Time involved - 30 minutes

3. Materials needed: Each group should have the following:

   a. An index card with a 3 inch diameter circle cut from construction paper.

   b. 100 smaller circles from the same paper made with a paper punch.

   c. A different color paper for each group.

4. Recommended procedure:

   a. Hide small circles around room before students come in.

   b. Form class into groups.

   c. Pass out an index card with the 3 inch circle to each group.

   d. Give the following directions for the exercise:

      Around the room is hidden 100 small circles the same color as the one you now have in front of you. (show several as examples).

      It is your group's job to find those 100 circles.

   e. Give the groups 10 - 15 minutes to search for circles.

5. Discussion questions:

   a. Did you find all your circles? (count them and find out).

   b. Did you see circles of any other color while collecting yours? Why didn't you collect these also?

Richard Sandys
David Sandys
Ron Garner
Jim Chemour

All About Us

1. Skill areas to be developed:

   a. Ability to collect data.
   b. Ability to organize data.

2. Time involved: Two days using about 25 minutes each day.

3. Materials needed: a list of the following on the board -

   a. Number of boys in class
   b. Number of girls in class.
   c. Color of eyes - blue, brown, etc.
   d. Color of hair - black, brown, red, etc.
   e. Pets - dogs, cats, fish, etc.
   f. Number of brothers, sisters.

4. Recommended procedure

   a. Make this a group activity by asking the students to do the counting and tabulating of this information on the board.

5. Discussion questions: Analyze the information that is gathered with such questions as:

   a. What color of hair do most students have?
   b. Are there more girls in this class or boys?
   c. What pet do most students have?

Lower Elementary

Doris Jean Jones
Blanche Edelman
Demetra Balmer

Will Our Earth Live or Die?

1. Skill area to be developed.

   a. The ability to listen with comprehension.
   b. The ability to recognize a problem.
   c. The ability to organize data related to the activity.

2. Time involved. 30 minutes.

3. Materials needed.

   a. Chalkboard
   b. Chalk
   c. Pictures showing different types of pollution should be used to help the class formulate ideas and questions to which they should seek answers or alternatives.

4. Recommended procedure:

   a. Class selects someone to write down their ideas for discussion.

   b. The teacher begins the discussion by showing pictures of pollution and asking what is pollution? She also will ask what is ecology and an environment?

   c. The children will begin to talk about both good and bad things which make our environment desirable or undesirable.

   d. The ideas of the children should be written on the board and discussed at length with the teacher acting only as a resource person. The following are examples of things to be discussed:

      1. Attitudes toward our environment.
      2. Recycling
      3. Pollution of our food, air, wildlife, rivers and land.
      4. Overpopulation
      5. Pollution by automobiles, heating fuels and factories.

   e. Some questions to be discussed involving attitudes and understanding our environment better may be as follows:.

      1. How do you feel about your environment?
      2. Are you and your family doing anything to help curb the polluting of our environment?

f. The teacher directs the class in organizing and listing their ideas in order of importance of what we should do to help preserve our earth and its resources.

3. Discussion questions:

a. How can we get people to change their attitudes toward our environment?

b. What would be the effect in 10 years if we stopped caring about or environment?

c. What would be the one thing in our environment you would change if you could?

d. Do you think that some of our ecology problems may no longer be problems tomorrow? Why?

Doris Jean Jones
Demetra Palmer
Blanche Edelman

Becoming More Aware of Pollution Through Pictures

1. Skill area to be developed:

   a. The ability to listen with comprehension.
   b. The ability to recognize a problem.
   c. The ability to organize data.
   d. The ability to generate alternative solutions.

2. Time involved: 25 - 45 minutes.

3. Materials needed:

   a. Manuprint or water color paper.
   b. Crayons or water color paints.
   c. Pictures showing pollution from previous activity for use as a model or to further ideas for new ones.

4. Recommended procedure:

   a. Form the class into groups of two.

   b. The pictures from the activity "Will Our Earth Live or Die?" should be used to generate new ideas or further clarify old ones on pollution.

   c. Each group must then decide what their pictures will be about. They will do a before and an after picture using the same idea.

   d. Each group may choose to either draw and color their pictures with crayons or to use watercolors.

   e. Ideas for pictures that the children may use are listed as follows:

	Before	After
1.	Fish and wildlife destroyed by factory pollution to land, air and water.	Fish and wildlife living in that same area around or near the factory without harm to them.
2.	A forest damaged or destroyed by a fire from a careless camper	A healthy forest which is the home for many species of plants and wildlife.
3.	Lawns and alleys cluttered with junk and garbage.	These same lawns and alleys cleaned up by the families, neighborhood or volunteer groups.

4. Children using the streets as a playground.	A park area set aside in the neighborhood for children to play safely.
5. Too many unsightly signs and billboards throughout the residential area.	Few if any signs in the residential area.
6. Too many people crowded together in the inner city.	Some of these people living out in the suburban areas of the city.
7. Lakes and streams posted with No Fishing or No Swimming signs.	These bodies of water made safer for swimming, drinking and eating.
8. Air pollution caused by factory smoke stacks and automobiles.	Factories which have abatement devices on their smoke stacks and automobiles using emission controls.

f. These pictures can be made into a bulletin board for use in the classroom or hallways of the school.

g. For a follow-up activity the class can reorganize themselves into larger groups and put on skits that they make up to help people become more aware of what is happening to our environment and what can be done now to help stop waste of our resources and help clean up pollution. Some of their pictures can be used in their skits.

3. Discussion questions:

a. What are some of the things that we can do to help clean up our environment right in our own community or city?

b. Why is it up to each of us to do our part in making our world a better place to live?

c. In what ways do you think that television could be used wisely in helping people become more aware of our problems with pollution?

d. Do you think that we will ever lick these pollution problems?

Tim Krepo
Donn Hellinger
Tim Kardatzke

How Fast Does it Grow?
(Comparing the growth rate of two plants)

1. Skill areas to be developed:

   a. The ability to recognize a problem.
   b. The ability to define a problem.
   c. The ability to collect data.
   d. The ability to organize data.
   e. The ability to analyze data.

2. Time involved: growing period of a seed (bean works good).

3. Material needed:

   a. Two glass receptacle , one for each seed.
   b. Two seeds.
   c. Ruler, meter stick or camera.
   d. A dark closet or a box.
   e. Bulletin board to display measurements or pictures.

4. Recommended procedure:

   a. Plant each seed in a glass receptacle next to the side so that root growth below the surface may be observed (follow planting directions).

   b. Put one receptacle next to the classroom windows.

   c. Put the other receptacle in a dark closet or on a desk covered completely by a box.

   d. Follow directions for watering on a seed packet, being sure to give equal amounts of water to each plant and to water both at the same time. (a good student responsibility).

   e. As seeds grow, record growth of each. The following methods are suggested:

      1. Take pictures, a picture of each on the same day.

      2. Measure growth with a ruler or meter stick.

      3. Use different length and color segments of yarn or rope to compare amount of growth on a bulletin board.

f. Involve the class as much as possible in collecting and organizing the measurements.

g. After all data is collected and organized the teacher will lead the discussion.

I. Discussion questions:

a. Did the two plants grow at the same speed?
b. Which one grew faster?
c. Why?
d. Which one grew slower?
e. Why?
f. Both plants received the same amounts of water. Why did one grow faster than the other?

g. Did the sun help the window and garden plants to grow?
h. Would plants grow as well outside without sun?
i. Does the sun help flowers and garden plants to grow?
j. Why is the sun important to grow plants in a garden?
k. Why do we grow gardens?

Section III

Values Clarification Activities

SECTION III

VALUES CLARIFICATION ACTIVITIES

Children and youth of today are confronted by many more choices than in previous generations and will soon be required to make many more environmental decisions affecting their community, nation and world.

The complexity of our times and of environmental decisions has made the act of choosing exceedingly difficult. Ideally, choices are made on the basis of one's underlying values; however, frequently persons (especially young people) are not clear about their own values.

The Values Clarification Process is concerned with trying to help students to become more aware of their own beliefs, attitudes and values; to consider and weigh the pros and cons and consequences of various alternatives; to consider whether their actions match their stated beliefs and if not, how to bring the two into closer harmony; and finally, to try to give students options, in and out of class, for it is only when students begin to make their own choices and evaluate the actual consequences, do they develop their own set of values.

The following are sample Values Clarification strategies that teachers have found helpful in assisting students to clarify their values regarding environmental issues. Though some strategies are recommended as being more appropriate for particular age groups, feel free to change and adapt them for your own uses.

As you become more familiar and comfortable with using the Values Clarification process, you will find that it can easily be included into any kind of teaching unit.

-85-/86

Voting Questions

1. Time involved: 15-30 minutes.

2. Materials needed: none

3. Recommended procedure:

   a. The teacher reads aloud each question by asking "Are you someone who....?"

   b. After each question is read the students take a position by a show of hands:*

      1. Those who strongly agree raise the hand high.
      2. Those who agree raise their hand slightly.
      3. Those who disagree lower their hand slightly.
      4. Those who strongly disagree lower the hand fully.

   c. Discussion can follow either each question or after several questions.

   d. This activity can also be written down on a worksheet.

4. Sample valuing questions: Examples for Lower and Middle Elementary grades. Are you someone who:

   a. Would like to live on a farm?*
   b. Likes to go on long car trips?*
   c. Would like to live in a different city someday?*
   d. Thinks you will smoke cigarettes someday?*
   e. Has a private place to go when you want to be alone?*
   f. Would like to plant something and watch it grow?

   Examples for Upper Elementary - Junior High grades. Are you someone who:

   g. Could live happily without electricity?
   h. Could enjoy living in a rural setting?
   i. Would go to school if you didn't have to?*
   j. Would like to change something about this school?*
   k. Would like to live in another country?*
   l. Would ask your parents or someone else you care about to stop smoking?*
   m. Likes to walk or ride a bicycle to a place rather than be driven?
   n. Would like to ride a motorcycle?*

Examples for Secondary Grades. Are you some one who:

a. Would buy only returnable bottles if both returnable and nonreturnable bottles were present in a store?

b. Feels modern technology will enable man to continue to enjoy the present standards of living for many decades to come?

c. Feels as long as we have to go through democratic processes to make changes, there is no chance of our moving fast enough to save the environment?

d. Feels that the population problem has a powerful magnifying effect on all our environmental problems?

e. Would prepare your glass, cans and paper for recycling if it were available?

f. Thinks that we should have spent all that money to go to the moon?

g. Would like to own a snowmobile?

h. Uses a spray deodorant?

5. Debriefing:

a. Voting questions call for public affirmation of one's values.

b. Discussion is very important. You can discuss male and female differences.

c. Example debriefing for spray deodorant issue: The first spray deodorant came out 12 (?) years ago. Now 90% of the population uses spray deodorant. How could we change attitude on the race issue so quickly?

d. Just ask each question and go on unless students want to discuss.

6. References:

Simon, Sidney; Leland Howe and Howard Kirschenbaum. Values Clarification: A Handbook of Practical Strategies for Teachers and Students. New York: Hart Publishing Co., 1972.

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* Procedure 3b and Sample valuing questions a,b,c,d,e,g,i,j,k,l,n and o have been reprinted by permission of Hart Publishing Company, Inc., from its copyrighted volume VALUES CLARIFICATION: A Handbook of Practical Strategies for Teachers and Students by Sidney B. Simon, Leland W. Howe and Howard Kirschenbaum.

All Grade Levels — Class Activity

Rank Order

1. Time Involved: 10-20 minutes

2. Materials Needed:

   a. pencil and paper

   b. blackboard

3. Recommended Procedure:

   a. Explain to class that you will be reading some questions to them, which they will rank order according to their own value perspective. Each question will consist of 3 or 4 alternative choices.

   b. Read a question, and write the alternative responses on the board.

   c. Have the students write down their rank orders (1 for first choice, 2 for second choice, etc.) for that question on a piece of paper.

   d. After everyone has completed their rank ordering for the first question, allow several students to share out their rank orders and their reasons with the class.

   e. Continue this same procedure for all the questions you wish to use.

4. Sample Valuing Questions:

   a. Which would you least like to be?

      1. Deaf
      2. Blind
      3. Paralyzed from waist down

   b. Would you rather be a

      1. Flower
      2. Tree
      3. Soldier

   c. Where would you rather be on a Saturday afternoon?

      1. At the beach
      2. In the woods
      3. In a department store

4.* Which is most important in a friendship?

1. Loyalty
2. Generosity
3. Honesty

5.* Where would you rather live?

1. On a farm
2. In the suburbs
3. In an inner city

6. Which is the least important to you?

1. A horse
2. A dog
3. A deer

7. How many children would you like to have?

1. 0
2. 1
3. 2

8.* What would it be hardest for you to be?

1. A prison guard
2. A welfare counselor
3. An assembly line worker

9. What is the most serious problem facing society today?

1. Education
2. Pollution
3. Taxes

10. Rank the following environmental problems in order of their critical nature.

1. Energy
2. Air and water pollution
3. Weather

11.* Which pet would you rather have?

1. A cat
2. A dog
3. A parakeet
4. A turtle

12.* If you were President, which would you view the highest priority?

1. Space program

2. Poverty program
1. Defense program

n. Which method of transportation do you like the most?

1. Riding in a car
2. Riding a bicycle
3. Walking
4. Flying on an airplane

o.* Which do you like least?

1. Ice cream
2. Pudding
3. Jello

o.* Which would you like to do most?

1. Learn to skin dive
2. Learn to ride a horse
3. Learn to ride a mini-bike

p. Which do we need to trade more of? Each group to be ranked separately.

Group I	Group II
Lawyers	Skilled Labor
Doctors	Professional
Teachers	Management

q. Which would you rather own?

1. A motorcycle
2. A bedroom
3. A TV set

r. You are hiring for a sales position in a state store. You have three applicants. Which one would you choose?

1. An ex-convict
2. Unmarried pregnant female
3. A released mental patient

s. The Lettuce Industry (employer) is open to demonstrate the main street. What action?

1. Arrest (violent pressure)
2. Negotiate
3. Petition the city hall

c. What is the most influential factor of social change?

1. Family
2. Peer group
3. Governmental laws

v. You witness a mugging. Which action would you take?

1. Direct assistance
2. Call police
3. Ignore

w. Have the class make up own rank orders.

5. Debriefing:

a. Publicly affirming one's values helps in clarifying those values.

b. No order is right or wrong.

c. Sharing our students' reasons for their rank orders helps other students clarify their own values by listening to other alternative positions, along with the students' reasons.

d. Helps students understand that many issues receive more careful consideration than we normally give them.

e. Helps demonstrate that to make a decision about an issue requires one to take a choice.

6. *eference:

Simon, Sidney; Leland Howe and Howard Kirschenbaum.

Values Clarification: A Handbook of Practical Strategies for Teachers and Students. New York, Hart Publishing Co., 1972.

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Either-or Forced Choice

1. Time involved: 45-50 minutes.

2. Materials needed:

   a. Two blackboards or large pieces of paper.
   b. Can also be done with two slide projectors and appropriate slides.

3. Recommended procedure:

   a. Have students arrange their desks/chairs so that there is a wide path from one side of the room to the other.*
   b. Place blackboards on opposite sides of the room.
   c. Place an either-or question on the blackboards; and ask
      Example: Which do you identify with more
      1. The Four Tops
      2. The Jackson Five
   d. Explain to the students that they are to select one of alternatives and move to that side of the room where it is posted.
   e. Have students form triads to explain briefly why they decided on this choice. Allow 2 minutes per student.
   f. After the 2 minute triads session have students return to the center of the room and ask another either-or question.
   g. Select a student from each opposing views and have them relate to the entire group why they made their particular choice.
   h. This exercise has an unlimited range of alternative questions to ask.

4. Sample of Either-or Forced Choice Questions. "Which do you identify with more:"

   a. Asphalt or grass
   b. Clean air or dirty air
   c. Noisy neighborhood or quiet neighborhood
   d. A clean playground or a littered playground.
   e. Love and understanding or hatred and distrust
   f. New housing or old housing.
   g. Equal rights or no rights
   h. Trees or telephone poles
   i. Expressways or bike routes
   j. Urban community or suburban community
   k. Strip mining or solar energy
   l. Nuclear power plants or steam power plants
   m. Urban farming or high prices
   n. Cooperative living or independent living
   o. Have group suggest other Either-or questions.

5. Debriefing

   a. Note the importance of having individual differences and the free-

tion to evaluate all possible alternatives to an issue or situation.

b. Participants can physically see how their values relate to the values of the group members.

c. No position or alternative is right or wrong.

d. Sharing out reasons for individual choice among group members is important in clarifying individual position.

e. Any two contrasting value statements can be used that apply to the group.

6. References:

Simon, Sidney; Leland Howe, and Kirschenbaum. Values Clarification: A Handbook of Practical Strategies for Teachers and Students. New York: Hart Publishing Co., 1972.

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Physical Continuum

1. Time involved: 10 - 20 minutes.

2. Materials needed:

   a. Two blackboards or large pieces of paper.
   b. Can also be done with two projectors and appropriate slides.

3. Recommended Procedures:

   a. Place blackboards on opposite sides of room.

   b. Clear area between blackboards.

   c. Write pairs of issues on boards.

      Example City (on one board) - Country (on other board).

   d. Explain to group the choices involved, making that choices exist from one board to the other board.

   e. Have participants place themselves along the imaginary line between the two boards which have opposite values listed on them.

   f. It is best if you eliminate the possibility of someone standing half-way between boards, so participants must make a choice.

   g. After people have aligned themselves, have them discuss amongst those adjacent to them, their reasons for placing themselves where they did along the physical continuum.

   h. Have people readjust their position, with respect to those people nearest them, to more accurately associate their position on the continuum with their personal value.

   i. Select individuals to relate to the group their reasons for their physical position on the continuum.

   j. Go on to next pair of values and repeat procedure.

4. Sample valuing questions.

   a. City - Country

      Which place would you rather live in?
      Which place would you rather work in?

b. Powerboat - sailboat

Which would you rather own? (both items identical in price.)

c. Snowmobile - cross country skiing.

Which would rather do?

d. Have group suggest other contrasting value statements.

3. Debriefing

a. Note the importance of people, physically and publicly affirming their values so as to better clarify them.

b. Participants can physically see how their values relate to the values of other group members.

c. No position is right or wrong.

d. Sharing our reasons for individual positions among group members important in clarifying individual positions.

e. Any two contrasting value statements can be used that apply to the group.

4. References

Simon, Sidney; Leland Howe and Howard Kirschenbaum. Values Clarification: A Handbook of Practical Strategies for Teachers and Students. New York, Hart Publishing Co., 1972.

Public Interview

1. Time involved: 5-10 minutes per interview.

2. Materials needed: none.

3. Recommended procedure:

   a. Ask for volunteers who would permit a public interview about some of their personal beliefs, feelings and actions.
   b. Explain ground rules several times as to safeguard the students personal feelings.
      (1) The teacher may ask any question about any aspect of his or her life and values.*
      (2) If student decides to answer question, she or he must answer honestly.
      (3) The student has the option to decline to answer question.
      (4) The student can end the interview at any time by simply saying "Thank you for the interview".*
      (5) At the completion of the interview the student may pose any of the same questions to the teacher that were put to him or her.
   c. Each interview should be brief. About 5-10 minutes, unless there is a demand by everyone to continue.
   d. You may want to invite other members of the class to answer any of the questions the interviewee was asked.
   e. After some practice at public interviewing you may want the students to choose the topic they want to be interviewed about.
   f. Instead of conducting the interview, you may want to select a student to conduct the interview. It is important to debrief student on ground rules before allowing any interviewing.

4. Sample interview questions: Lower and Middle Elementary grades.

   a. Do you get an allowance? What kind? Do you work for it?*
   b. If you could be any age, what age would you like to be?*
   c. Will you be a cigarette smoker? Why?*
   d. What about the world around do you wonder about?
   e. Do you think people should be allowed to live anywhere they want to?
   f. What are your feelings about people of other races and cultures?
   g. Do you like living in the neighborhood you are presently living in? Why?
   h. Would you want to live in an area where the air was unclean? Why or why not?
   i. Do you like flowers and trees? Why?

   Examples for Upper Elementary - Junior High grades.

   a. What are your feelings about poverty?
   b. Do you feel comfortable about living in the city?
   c. What are the major problems facing young people today?

d. What is your opinion on public welfare?
e. Is there anything special about family meals at home?
f. How do you feel about man's exploitation of our valuable natural resources?
g. What are some of the reasons for environmental pollution in this country?

Examples for Senior High school.

a. Should your school provide classes dealing with population education?
b. What are your views about racism and sexism in your school? Home? Neighborhood?
c. Do you feel that large energy corporations should be allowed to strip mine for coal on Indian lands? Why? Why not?
d. Do you feel communities should have control of their tax monies which they contribute yearly to the state and federal governments?
e. How important is it to the survival of space ship earth and its passengers to maintain a clean environment?
f. Are there some adults outside of school whom you admire intensely? Why?
g. What are your feelings about a world with universial peace?
h. What has turned you off to school? Why?
i. What are some ways students can contribute to their own education?

5. Debriefing:

a. Discussion is very important. You can compare and contrast male and female responses.
b. Sharing out reasons for individual positions or values is a good way of developing good interpersonal relationships among group members.

6. References:

Simon, Sidney: Leland, Howe, and Kirschenbaum. Values Clarification: A Handbook of Practical Strategies for Teachers and Students. New York: Hart Publishing Co., 1972.

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* The Recommended Procedure in 3b (1) and (4) and the Sample Interview Questions in 4a,b,c have been reprinted by permission of Hart Publishing Company, Inc., from its copyrighted volume VALUES CLARIFICATION: A Handbook of Practical Strategies for Teachers and Students by Sidney B. Simon, Leland W. Howe and Howard Kirschenbaum.

All Grade Levels — Talbert B. Spence

The Pie of Life

1. Time involved: 45 - 50 minutes

2. Materials needed:

   a. Blackboard or chart paper

   b. Worksheets (for Upper Elementary, Junior High, Senior High) with drawing of a large circle to be used in diagraming a "pie of life" (see example in 3g).

3. Recommended procedure:

   a. Explain to students that this activity is designed to have them investigate our individual lives - to see how we actually do spend our time, our money, etc.

   b. Group class into teams of 4-5 students. Explain that these teams are for the purpose of having individual and group decisions on how our time, money, etc. can be used more efficiently.

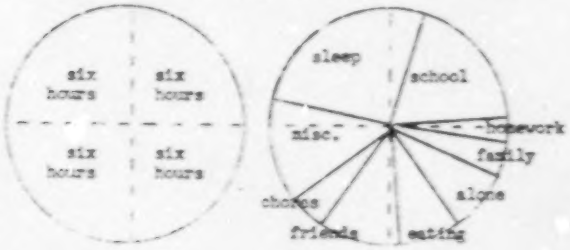
   c. Ground rules: Teacher draws on blackboard/chartpaper or on worksheets a large circle and says, "This circle represents a part of your life". Explain that the group will be doing several such pies of life.

   d. Have students divide their circles into four quarters using dotted lines. Note: For lower elementary and middle elementary this portion of the activity should be done by the teacher at the blackboard.

   e. Explain that each slice represents <u>six</u> hours. Discuss with groups that they are now going to try to estimate how many hours or parts of an hour are spent on the following:

      (1). On sleep?
      (2). On school?
      (3). On eating?
      (4). With friends, socializing, playing sports, etc.?
      (5). Alone, playing, reading, etc.?
      (6). On homework?
      (7). Etc. (Any others you can think of)?

f. Have students divide up the time spent in their individual pies of life. Explain that their allotted times will differ from one another. Have them draw slices in their pies to represent proportionately the part of the day they spend on each category. An example might be:



g. After students have completed individual pies (about 10-15 minutes) have the group work toward a group pie of life with the same categories. Have students take about 10 minutes to do this and then have groups share out their results to the rest of the teams.

h. Discuss the importance of using time wisely and efficiently. Emphasize that a large majority of our time spent in a 24 hour period is wasted time; most by sleeping (a reasonable amount is needed) and by doing nothing.

i. Have students develop a list of ways to use their time, money, etc. more wisely and efficiently.

j. Examples of other categories that could be used in the Pie of Life strategy:

(1). How does society spend its money?

(2). How much time is spent on cleaning up the environment?

(3). How much money is spent on cleaning up the environment?

(4). How much time is spent by people destroying the environment?

(5). How much time is given to students to plan and make decisions?

(6). How do urban children spend their time daily?

4. Debriefing:

   a. It is important that students start to evaluate how their time and money are spent by them and by others. Also to think about and develop ways of better utilization of their time and money, etc.

   b. Might be a way to discuss alternative life styles, also a way to clarify individual and societal values on time and money.

   c. For lower and middle elementary levels, this strategy could be a way of strengthening knowledge and skills of telling time and understanding what it is all about.

5. References:

   a. Simon, Sidney: Leland Howe and Howard Kirschenbaum. Values Clarification: A Handbook of Practical Strategies for Teachers and Students. New York: Hart Publishing Co., 1972.

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* Procedures in 3a,c and e have been reprinted by permission of Hart Publishing Company, Inc., from its copyrighted volume VALUES CLARIFICATION: A Handbook of Practical Strategies for Teachers and Students by Sidney B. Simon, Leland W. Howe and Howard Kirschenbaum.

Lower Elementary
(Transportation)

Oak Park Schools

Role Playing

1. Time Involved: Half-hour

2. Materials Needed:

   a. Props for different roles (car, bus, plane, bike, train, boat)

3. Recommended Procedure:

   a. Teacher sets up roles. A volunteer is picked to be the car and one to be the plane, someone on the bike and a child to be the train and boat.

   b. Students playing the above roles get up in front of the class and the children are told to use their imaginations and pretend these things can talk. Each role tells the class why they should use them as a means for transportation and why they should not use the others. Example: The car might say, "I am faster than walking or riding a bike." The bike might interrupt at this point and say, "Well, I'm very pretty and I don't pollute the air". The plane can say, "I'm faster than all of you."

   c. After each role has presented their viewpoint, do the debriefing.

4. Debriefing:

   a. Rank order the types of transportation. Ask each student to put this list in the order from favorite kind of transportation to the least favorite: Car, Boat, Bike, Train, Airplane.

   b. Open Ended Sentences: I learned that.... The best way to go to school is... I would take a long trip and go by...

   c. Either-Or Forced Choice: Ask students to make a choice:

      (1). I would rather drive in a car or ride a bike.

      (2). I would rather fly in a plane or take a boat ride.

5. References:

   a. Sidney B. Simon, Leland W. Howe, Howard Kirschenbaum, Values Clarification: A Handbook of Practical Strategies for Teachers and Students, Hart Publishing Co., Inc., 1972

Section IV

Lower Elementary Environmental Encounters

SECTION IV

Environmental Encounters

This section contains a series of sample school-community environmental problem solving activities (Environmental Encounters). In these environmental encounters students (with guidance from the teachers) actively become involved in exploring and critically evaluating their environment and existing environmental problems. The students may then begin to develop alternatives and plans of action for solving environmental problems. As students become actively involved in environmental problem solving they gain the opportunity to acquire both knowledge and skills necessary to deal with current and future environmental problems.

Included are sample environmental encounters relating to all grade levels and disciplines starting with early elementary encounters, which concentrate mainly on developing a basic awareness and appreciation for the environment, and ending with senior high encounters, in which students may actually become involved in the political process in trying to implement the designed plans of environmental action.

You may find it helpful to adapt some of the sample encounters for use in your particular classes. However, you will probably find that the "best" environmental encounters are ones jointly developed with your students around their environmental interest and concerns.

Environmental encounters are included for each of the five grade levels. Within each level there are sample encounters for the following topics:

1. Ecology and Pesticides
2. Water Quality
3. Air Pollution

4. Recreation

5. Policy and Planning (soils, land use, planning, and environmental law)

6. School Site Development

7. Transportation

The encounters represent a wide diversity, so that some are applicable to inner city, and some to suburban and rural situations.

Lower Elementary
Air Pollution

Dolores Furesz

INVESTIGATING AIR POLLUTION IN THE COMMUNITY

BEHAVIORAL OBJECTIVES:

At the completion of this encounter, the student should be able to:

1. Explain what is meant by the term "air pollution."
2. Identify (number) major causes of air pollution in the community.
3. List (number) ways that air pollution is harmful to man and to other living things.
4. List (number) ways that air pollution can damage non-living things.
5. List (number) ways one can find out if the air in the community is polluted.
6. Describe (number) ways that people are trying to lessen the air pollution problem.
7. Design and assemble in booklet form the information gathered on air pollution.
8. Distribute this booklet to inform parents on the problems and possible solutions of air pollution.

ACTIVITIES:

1. Go outside and look at the sky. Is it clean and bright-looking? If not, what do you think is in the air? (particles, smoke, ordors, termed "pollution") Why is pollution undesirable? (It is harmful to man's health and property).
   a. What ways can air be polluted "naturally", without man's help? (dust storms, forest fires, volcanic eruptions, rotting plants and animal bodies).
   b. How can man pollute the air? (factory smoke, car and truck exhausts, burning leaves and trash, heating homes, using fireplaces).
2. View the filmstrip on air pollution in the "Environmental Crisis" * series in your research center. Do you see any problems there that are in your own community? Which ones?

* Environmental Pollution: Our World In Crisis - set of six - Ward Natural Science Establishement, Inc., Rochester, New York.

3. Take a bus ride through the community. What do you see that can be a cause of air pollution? (smoke from chimneys of factories, businesses, private homes, exhaust from cars and trucks, open burning, dust blowing from open land areas).

4. Interview your parents and neighbors about air pollution. What do they say causes air pollution? How do they think it hurts us?

5. Discuss why people don't like air pollution. Why do we worry about what is in the air? How can it hurt us? How can it hurt other living things? Can it hurt other things too? (non-living)

6. Invite an air pollution specialist or school nurse to talk about air pollution and its effect on a person's health. Ask questions about things that worry you or your parents or your neighbors.

7. From what you have heard and from your discussions, make a list of all the ways that air pollution can hurt man. (damage lungs, cause coughing, eyes to water, headaches, vomiting, nausea, fatigue)

8. Read and discuss ways that air pollution affects our property. Refer to the filmstrip mentioned earlier. (#2) How does it affect living things on our property? (affects process of food making in flowers, trees and grass; makes plants turn yellow; retards growth; kills the plant). How does air pollution affect other things in your property? (affects color of buildings, dissolves marble, pits metal, corrodes steel, discolors paint).

9. How can you find out if the air in the community is polluted? (Ask County Health Department) Find out about some experiments you can do.

   a. Place two cake pans on the school roof. Smear petroleum jelly on one, and place white drawing paper in the bottom of the other. Remove from roof the next day. Do you see anything stuck to the petroleum jelly? Do you see anything on the white paper? What do you think it is? (dust, soot)

   b. In winter set a pan on the roof to catch snow. Melt the snow. What do you find in the water? How did it get there?

10. Perform some experiments that demonstrate other forms of air pollution.

   a. Light a candle. Hold a metal spoon over the candle. What collects on the spoon? (carbon) Can you name some sources of carbon pollution in your community?

Blow out the candle. What is going in the air now? (smoke) Can you name some sources of this form of pollution in your community?

b. Show a dirty furnace filter and a used bag from a vacuum cleaner to illustrate the dust particles found in household air.

11. Refer to filmstrip again. Name some ways that the air pollution problem can be diminished.

a. Some cities have passed laws so people cannot burn trash, garbage or leaves.
b. Engineers are working to make cars, buses, planes and trains send less fumes into the air.
c. Some factories are installing pollution control devices so less pollutants go into the air.

d. Some people are using their cars less, and walking or riding bikes when they do not have far to go.

12. Using what you have learned about air pollution, construct a booklet that illustrates:

a. The major sources of air pollution in your community.
b. How pollution hurts man and his property.
c. How we can help diminish pollution problems in the air.
This booklet can be made from chart story paper. Pictures of problems could be placed in it with a story about each picture.

13. Send a booklet home to each family in the school.

Lower Elementary
Air Pollution

Loraine Turcotte

INVESTIGATING AIR POLLUTION

BEHAVIORAL OBJECTIVES:

At the completion of this encounter, the student should be able to:

1. Identify air as a physical substance.
2. Demonstrate its presence by its effects.
3. Demonstrate that air contains many impurities.
4. Identify through senses (number) uses of air.
5. Identify through ones senses (number) pollutants in the air.
6. List (number) air pollution problems.

ACTIVITIES:

1. General class discussion concerning the three basic components of the environment: When you go swimming what do you swim in? What do you splash on one another? What do you plant seeds in? What do you put in a sandbox besides toys? What makes your kites fly?
2. Can you smell, see, feel air? How do we know it is around us? Look outside and see if you can see evidence of the presence of air. Are leaves moving? Are the trees swaying back and forth? Is dust being blown around the playgrounds?
3. Find a piece of furniture or some other article in the room that is dusty. Where did the dust come from? Put on the movie projector - turn out the light - what do you see in the ray of light? How many of you have ever had something in your eye? How did it get there? How many of you have ever seen dust on plant leaves? Where did it come from?
4. Take students outside and collect leaves from different areas and show by comparison of leaves the degree of dust that had settled on each leaf. Collect some leaves from inside a forest or sheltered area from a field or hedgerow from along side a road. Which leaves are dirtier? Why? Would leaves from trees in a city be dirty? Does this dust hurt the leaf? How?

5. Try using one senses to identify air and its impurities. How many senses will help you determine healthy or unhealthy air? Can you see dirty air? Can you smell dirty air? Can air be dirty even if you can't detect it?

6. A game could be played where a student is blind folded and one passes under his nose various pleasant and unpleasant smells -- emphasize or point out that through our senses we can detect the good and bad part of many things. Also through our senses we can detect many things in air. Have you ever smelled a rotten egg? Can you smell a barnyard? Can you smell popcorn? Can you hear water running? Can you hear a dog bark? Do you hear sirens sometimes at night? Can you hear a city? Traffic? Is it loud? Is there too much noise? Could this mean air in someplaces has too much noise? Is it as noisy in the country? Could air then be filled with more noise in one area than another? Could noise like dust be in air?

7. Could there be a way to remedy some of these air problems that have been identified such as dust? noise? What are they? Do we have such problems in school? Should we talk to the principal about them?

Lower Elementary
Ecology and Pesticides

Dolores Puross

INVESTIGATING HABITAT ON THE SCHOOL SITE (OR A LOT NEAR THE SCHOOL)

BEHAVIORAL OBJECTIVE:

At the completion of this encounter, the student should be able to:

1. Describe the concept of habitat.
2. Identify the types of habitat found around the school site.
3. Explain why and how the habitat is always changing.
4. List (number) natural or man made forces that might alter habitat.
5. Identify (number) ways that man has managed habitat areas to help wildlife.
6. List (number) possible habitat improvements for certain animals on the school site.
7. Design a habitat improvement project for a specific species.
8. Carry out the habitat improvement project.

ACTIVITIES:

1. Informal oral pretest - what do you think all animals need to live? What are the specific needs of a racoon, deer, chipmunk?
2. Orientation to the meaning of habitat. (The total of all environmental factors - food, water, cover and protection - that must be present for a given animal to survive *and* reproduce). This might be done through class discussion, film strip, movie, etc.
3. Walk around the school site. What types of general habitats do you see? (Fields, wetlands, woods) What animals could live in these habitats?
4. Walk through a field community and examine it more closely.
   a. What types of animals could live here? (Rabbit, moles, pheasants, field mice) What are their habitats? Why do you think so?
   b. How do you know for sure which of these animals really live in your particular field habitat? (By actually seeing them, finding their homes, studying tracks and droppings, live trapping). Examine the area for nests and tracks.
   c. Use a live trap from the research center or have the students make one. Set it up in the field. See if any field residents are caught. If so, note the animal and release, as live trapping should be used to identify the animals that reside in an area, and not for bringing the animals into the classroom.

d. Read to students about the life habits and needs of these field animals. In what ways do all these animals need the same things? How do they differ?

5. Examine the wetland habitat. What kinds of animals might live here? (Crayfish, red-winged blackbirds, snakes, toads)

a. Check the area for tracks and homes. (Crayfish holes are especially easy to find.)

b. Set a live trap. Examine the contents and release.

c. Read about these animals. What things do they need that are the same? How are they different?

6. If no woodland habitat is available on the school site or nearby lot, look at a filmstrip or film on animals of the woodland.

a. What types of animals might live here? (Squirrels, chipmunks, woodpeckers, racoons, snakes.) How can we find out what animals actually live in a particular woods?

b. Look at filmstrips and read stories about these animals. In what ways are they the same, and in what ways are they different?

7. Discuss the idea that some animals have a large habitat encompassing more than one community. Can you name some of these animals? How do they use different parts of this habitat? (One part for shelter and another one for seeking food.)

8. Make a large mural depicting three habitats of three animals. Include one that might live in more than one community. Outline those animals that you have determined are actual residents of your particular site. Do you see any pattern between all the animals that exist on your site? (Perhaps they all adopt readily to living in close contact with man.).

9. Arrange an exhibit showing the physical evidences of the presence of these animals (track imprints, homes, pictures taken of these animals) on the school site.

10. Discuss the permanency of their residence in the habitat. Will they always be there? Why not? (Habitat is always changing, either naturally or by man's alterations.)

11. Look at filmstrips or slides that show how habitat changes naturally (process of natural succession in plant growth, fire, disease, insect blight, storm damage.)

12. Identify the ways man can alter the habitat (bulldozing, use of pesticides and herbicides, air, water and noise pollution, logging.)

13. Draw a series of pictures that illustrate the different ways that habitat can change.

14. Identify some ways that man alters the natural succession of habitat to help animals. (Maintaining sub-climax forests for deer browse, shrub areas for rabbit and pheasant cover, burning over areas of jack

pine forests to reestablish these same types of forests as a habitat for the Kirkland's Warbler.)

15. Reexamine the animals living in each community. Can some animal's habitat be improved by man? Why would you want to do this? How would you do this? (Set up brush piles for rabbits, and berry bushes for pheasants, blue jays and cardinals, plant shrubs between the field and the woodland community to create edge effect, which attracts more animals.) Will the increase of one animal species adversely affect the other animals living there?

16. Invite a game biologist to make suggestions on habitat improvement. Consider the problem that you will affect the entire ecosystem of that community by encouraging the growth of one species.

17. Outline a project for habitat improvement that will encourage the growth or protection of one species. Describe the method you will follow to carry out this project.

18. Implement the outlined project in activity #17. This could be done either on school grounds or elsewhere in community.

19. Design a method to evaluate how effectively the habitat improvement is working. Do you see more of these animals in the area? What are some other ways you can tell if these animals are more abundant? Do you see any adverse effects on other members of that community?

Lower Elementary
Ecology and Pesticides

Dorothy Cox

ANIMAL LIFE IN WINTER

BEHAVIORAL OBJECTIVES:

Upon completion of a successful encounter, the student should be able to:

1. Describe (number) kinds of ways animals spend the winter.
2. Draw a picture of (number) kinds of winter homes for animals.
3. Draw a picture of (number) kinds of food available for animal life in winter.
4. Describe (number) ways the class can help provide food for animal life in winter.

ACTIVITY:

1. Visit a nearby field. Observe and open a goldenrod gall. What do you see inside? Do you think it is an insect egg, larva, or adult? Does it need food in winter? Does it provide food for something else?
2. Point out and investigate kinds and amounts of weed seeds in the field. Who would eat these seeds? How do you help seeds travel? How does this help provide more food?
3. Point out and investigate kinds and amounts of berries on hedgerow shrubs. Who would eat berries? How do berry seeds travel? How does this help provide more food?
4. Point out and investigate bud ends of shrubs. Any evidence that twig ends are bitten off? Who would like to eat these? Look for tracks.
5. Watch for cocoons in hedgerow. If any are found, take one inside to be kept for spring emergence.
6. In woods community look for evidences of wildlife at base of trees and shrubs. Look for evidences of animals such as pieces of nut shells, bits of fur, tracks, small openings to ground burrows.
7. Investigate rotted log between bark and wood for insect life.
8. Take sample of leaves and forest floor litter back to classroom for careful investigation of possible insect life. Use microprojector.
9. Discuss with class ways of helping to provide food and cover for wildlife in their own yards and school yards. Choose at least one to develop with class.

Lower Elementary
Ecology and Pesticides

Dorothy Cox

AN INVESTIGATION OF PLANT GROWTH NEEDS

BEHAVIORAL OBJECTIVES:

At the conclusion of a successful encounter, the student should be able to:

1. Describe (number) ways a plant can get the water it needs.
2. Describe the kind of soil that provides good food for a plant.
3. Draw a picture of what plants look like when they have no light.
4. Describe orally (number) ways you can help plants so that they have the proper environment for growth.

ACTIVITIES:

Upon completion of Unit 9, "Living Things Grow," Concepts in Science, Grade 1, Harcourt, Brace and World, the students will:

1. Investigate outdoors the growth of a variety of plants including grass, weeds, hedgegrow shrubs, trees. Do these plants have a supply of water? Where does it come from? Dig down with shovel in open area to observe moisture in soil. Have children feel soil.
2. Do these plants have a food supply? Use shovel to observe top soil in field area. Note color, texture, moisture. Is it light or dark? Is it crumbly, packed, or grainy? Is it damp or dry?
3. Observe soil in playground area where nothing grows. Note color, texture, and moisture. Why do you suppose nothing grows here? Would a plant have light? Would it have water? Do you think it would have good food? Would the feet of many children help keep plants out?
4. Do these plants in the field have light? Turn over an object that blocks out light (rock, board, rotted log or branch, litter, etc) to note color, shape, and size of sprouts underneath. What happens when a plant does not get light? Do you think these plants will grow very long? Do you think they will ever look like the plants nearby that have light?
5. Observe parking lot and building. Do you think any plants can grow in the soil under the blacktop? Could they get any light or water? What would happen if we built so many buildings and parking lots and paved all the streets so that there was very little open space left? Is this a good idea?
6. What can you do to help plants grow? Can you water them when they need water? Can you pick up litter and boards that keep grass from growing properly? Can you think of any other ways you can help?

Lower Elementary
Policy and Planning

Dolores Furesz

INVESTIGATING A SOIL PROBLEM ON THE SCHOOL SITE

BEHAVIORAL OBJECTIVES:

At the completion of a successful encounter, the student should be able to:

1. Explain the origin of soil.
2. Identify the three areas of a soil profile.
3. Explain what is needed in soil for good plant growth.
4. Draw (number) pictures that show how people are dependent (directly or indirectly) on soil.
5. Relate orally (number) ways that soil can be abused.
6. Identify a problem area of soil misuse around the school site.
7. Identify (number) individuals who might help in resolving the problem.
8. Submit a plan to remedy the situation.

ACTIVITIES:

1. Tell where you think soil comes from (oral pretest).
2. Go out on the school site and collect or dig up some rocks.
   a. Separate the rocks into two piles: sedimentary (sandstone, limestone) and igneous rocks. (Rock classification can be done by using research center with teacher and research center coordinator).
   b. Using the sandstone or limestone, rub two rocks together over a piece of newspaper (soil particles can be made by rubbing two rocks together).
   c. Using a hard (igneous) rock, place it in an old sock, and hit it with a hammer (chips are pieces of soil).
   d. In nature soil particles from rocks are made by rain, water, wind, frost, lichens and plant roots.
3. Take a soil sample on the school site with an auger. (Obtain from research center or from local soil conservation consultant). If one is not available use a shovel.

4. Identify the three areas of the soil profile: topsoil (A horizon), subsoil (B horizon), and parent material (C horizon).

   a. Experiment with each to see its fertility: Place a sample of each soil in three pots, and plant fast growing seeds. Which grew the best? Why? (Topsoil - has the most organic matter.)
   b. Examine the three soils with a magnifying class. What do you find in the topsoil that is not found in the other two? (Decayed plant and animal matter).

5. Experiment with water penetration in sand and clay. Fill two jars with samples of each soil. Pour equal amounts of water in both jars. In which jar does the water pass through faster? (sand)

6. Examine the need for ground cover. Use two boxes, both with a screen on one end. Fill one box with soil and one with sod. Tilt both boxes upward, the lower end being the screen end. Have the screen ends resting on shallow pans. Pour equal amounts of water in each. Watch for amount of water entering plants. Which one loses the least water? (the box of sod - ground cover holds the water.)

7. Show slides depicting ways that soil can be destroyed.

   a. Erosion: wind, water
   b. Exhaustion of nutrients
   c. Burning
   d. Overgrazing
   e. Removal of surface plants.

8. Look for a soil problem area on the school site.

9. Identify the type of soil problem that it represents.

10. Take a soil profile of the problem area. Is there any A horizon (topsoil)? Does it contain any organic material? (Use a magnifying glass.) Is it heavily vegetated? Will watering help this problem or make it worse (cause more soil erosion)?

11. Use a soil testing kit. (Research centers have a test kit that tests for nitrogen, phosphorous and potash, and also checks the acidity or alkalinity of the soil.) What minerals, if any, can be found in the topsoil? Why are these minerals important?

12. Make a chart listing all the information gathered about the problem area on the school site.

13. Invite the Soil Conservation Agent of your county to come and suggest remedies based on your information (in Macomb County consult Mr. Tom Gough).

14. Prepare a plan using the information given by the Soil Conservation Agent and the suggestions of the students.

15. Present your plan to the principal, the Student Council, to an all-student assembly, or all three.

16. Enlist the help of the above individuals to remedy the soil problem on the school site.

17. Implement the plan.

Lower Elementary
Policy and Planning

Loraine Turcotte

INVESTIGATING THE PLANNING OF A CLASSROOM

BEHAVIORAL OBJECTIVES:

At the completion of a successful encounter, the student should be able to:

1. Describe the location of their classroom in the school building.
2. Describe the present appearance of their room.
3. List the students' equipment for that room.
4. Identify (number) activities that take place in their room.
5. Design new arrangements or plans for ones room in order to better carry out desired classroom activities.
6. Carry out proposed new arrangements.
7. Discuss the concept and purpose of planning.
8. List (number) ways one plans for daily activities.

ACTIVITIES:

1. General orientation discussion: Do you like where your tables and chairs are placed in this room? Would you like to put your toys in another area? Would you like to change the equipment and furniture in your own way?
2. Where is your room from the front door of the school building? Is your room by other Kindergarten rooms? Are you close to the principal's office? What area is outside your classroom window?
3. Is your room larger than other kindergarten rooms? Are your fixtures, sink, counters, built for your height?
4. What equipment, supplies do you need for your classroom? Why? Name some equipment the teacher needs. Name some equipment or facilities we all need?
5. Name some of the activities you do in this room. List activities that you would like to do but have been unable to carry out in the room? Why? Can a new arrangement allow for new activities to take place?

6. Remove all furniture, cabinets, play equipment from our classroom. Now we will go back into our room, walk around and try to figure out new arrangements or plans. An outline of the room would be drawn on the blackboard. Questions could then be asked about new arrangements of furniture in the room. Where would you like to place your tables and chairs? Why? Where do you want to place your toys? Do you need a lot of room around your toy area? Why? Where are you going to place your school supplies? Should they be near your desk? Find a spot for our snack time supplies. Where do you want the teacher's desk and file cabinets? Should they be close together? or not? What about a special place for "show and tell?"

7. Are there any other facilities, equipment, or toys that might be helpful to us in our classroom? If so, how might we obtain them? Do we list the reasons why we need them? Find out their availability. Make a presentation to the principal, P.T.O., etc.

8. Design a new arrangement of the room that would be more conducive to the activities that occur there. Once design is made, carry it out after receiving proper authorization.

9. After new arrangement has been accomplished, review the activities that preceded it. Why did we think of the various uses of the room before rearranging it? Why did we list existing equipment and desired equipment before actual rearranging? These preliminary activities before the major event is called planning. Do we plan for school? Lunch? Bed? Play? How and why? Do we plan in working outdoors with the land, trees, gardens, etc? Why? Discuss the importance of planning ahead.

Lower Elementary
Policy and Planning

Dolores Furesz

PLANNING A COMMUNITY

BEHAVIORAL OBJECTIVES:

At the completion of a successful encounter the student should be able to:

1. Explain the ecological concept of a community.
2. Identify (number) parts of the student's community.
3. Describe (number) ways that the natural features of the land influenced the land use in his community.
4. Demonstrate by role playing the concerns of (number) parts of his community as it grows and carries on its daily activities.
5. Demonstrate through role playing the task of the planning commission to take into account all possible interests of a community when planning for its development.
6. Write out a plan to improve one visual blight of the community.
7. Construct a model of the community for demonstration purposes.

ACTIVITIES:

1. Look at a filmstrip or film that explains the parts of a community (schools, industry, business, housing development recreation medical facilities, commercial services). What is a community? Do each of its parts help one another? What is meant by inter-dependency? How does each one depend upon each part of a community as shown in the filmstrip? Do you have all these parts in your community that are shown in the filmstrip?
2. Look at slides that show the parts of the student's own community. Can you identify the major parts of your community?
3. Invite a resource person to tell the history of the area. Have them relate what effect the natural features of the community had on its development. (the river, the Indian trail, fertile farm land).
4. Draw a mural depicting the early history of the community.

5. Using the flannel board as the community area, label the major features of the student's community. These could be a river, a flood plain, flat land, rolling land.

6. Using flannel board cutouts, place factories, schools, parks, clinics, shopping centers, etc., over the community area. Where are these places located in the community? Can you identify possible problems as a result of their location in relation to land features? Why? Do you see ways that any of these could be changed?

7. Discuss the physical appearance of the community (trees, hills, signs, buildings). What do you like best about it? What don't you like about it? Do you see any ways that the community could improve its appearance?

8. Write a letter to the local newspaper telling of one visual blight and how you would improve it.

9. Role play by taking turns at being a business man, a land developer, a factory owner, a farmer, a recreation official, a home owner, etc., and tell why you are important to the community and why you want to locate in a certain area of the community. What are your interests? What does the community receive from you? What do you depend on the community for?

10. Choose one community interest group. Write a story telling why you, as a member of this group, are important to the community.

11. Form a "planning commission." Choose one person to represent each interest group. Develop a plan for the community through discussion and concessions.

12. Construct a simple model of the community, using moveable houses, buildings, trees. Have the group move the parts around to show where the various parts of the community are now located and how they would change some of these. Why?

13. Display the plan in the research center. Have the group explain the model to other students, showing present locations and telling how and why they would change certain areas of the community.

Lower Elementary
Recreation

Dolores Furesz

PLANNING PLAYGROUND IMPROVEMENT

BEHAVIORAL OBJECTIVES:

1. Explain uses of the playground.
2. List possible types of play activities that could take place on the playground.
3. Identify (number) problems that limit or endanger playground uses.
4. List (number) needs for the playground.
5. Suggest (number) alternatives one could use to enhance the recreational functions of the playground.
6. Plan (number) improvements on the existing playground of the school.
7. Describe a strategy to explain to the school community the need for playground improvements.
8. Carry out this informational strategy.

ACTIVITIES:

1. Identify the different ways that students play, both on the equipment and on the playground itself.
2. Make a list of the playground equipment and of the types of games played which need space only.
3. Relate a personal experience of problems that occur on the playground. Are these problems the result of inadequate room, lack of equipment or a danger inherent in certain equipment? Would more equipment solve the problem? Is there a need to change things (different scheduling, rearrangement of equipment?)
4. List the suggestions for playground improvement?
5. Discuss the possibility of added equipment. How will you decide what should be added? Where can you go to find out about playground equipment? Who will pay for it? Who will install it?

6. Prepare two alternative plans (rescheduling of recess time, rearrangement of equipment, perhaps) if new equipment cannot be acquired, or is not needed.

7. Enlist the aid of older students to help select equipment. Consider space and cost.

8. With the help of the older students draw a map of the playground indicating where the new equipment would be placed, and the location or relocation of present equipment.

9. Present the plan to a parent group (PTA, PTO, etc.) to gain approval for the project and financial support for the purchase of the equipment.

Lower Elementary
Recreation

Betty Ebert

PARK PLANNING TO MEET THE NEEDS OF YOUNG PEOPLE

BEHAVIORAL OBJECTIVES:

At the completion of a successful encounter, the student should be able to:

1. Describe orally what is meant by a park, city park, state park, national park.
2. Locate parks on a state map.
3. Identify (number) uses of parks.
4. Describe orally the natural surroundings and equipment needed in a park to meet recreational desires.
5. Identify availability of present parks in the community.
6. Demonstrate increased understanding of effective planning of park location.
7. Identify who heads the park planning committee and (number) present concerns of his about parks in community.

ACTIVITIES:

1. Discuss with the students their interpretation of a park, a city park, a state park, a national park. Who owns the parks? Why do we have parks? Have we always had parks? Read WHO KNOWS OUR NATIONAL PARKS? pp. 38-39 in Nov. 1969 issue of RANGER RICK's to the students.
2. Cut out the parks from a state road map as they are located by the students. Give the cut out parks to the students. Hold the map up to the light so the students have a better understanding of the number and locations of parks in their state. One could also place pins showing the various state parks on a map. Where are most of them concentrated? Why? Do same exercise relating to community parks.
3. Draw pictures showing the student participating in his favorite activities at the park. List the activities in the order of the greatest participation, so the students can see the most popular uses of a park.

4. Visit a park to see if it meets their need. What do they like about the park? What don't they like about it? What do they want that is not in the park? Are there ways to get the things they would like in the park? Does any equipment pieces affect natural surroundings? How? How can one blend in natural surroundings and equipment to enhance the park?

5. Determine the most effective locations of parks to meet student needs by putting pieces of green felt on a large local map in absurd locations: ex. all the pieces in one corner, then around the edge, etc. Help the student to discover which park planning meets his needs and that park locations are important to serve his needs.

6. Identify who is in charge of park planning and invite him to class both to discuss park planning now and in the future and to answer questions asked by the students.

Lower Elementary
School Site Development

Dolores Furesz

INVESTIGATING WAYS FOR ENVIRONMENTAL ACTION ON THE SCHOOL SITE

BEHAVIORAL OBJECTIVES:

At the completion of a successful encounter, the student should be able to:

1. List (number) natural ecological characteristics of the school site.
2. Identify (number) environmental problems on the school site.
3. Select one environmental problem and develop a plan for its improvement.
4. Identify the individuals (power structure) of the school who have the authority to permit change.
5. List (number) individuals who can suggest ways to improve conditions of the school site.
6. Describe the actions needed to have the plan adopted.

ACTIVITIES:

1. Walk around the school site. Take an oral inventory of its physical characteristics. (Is it rolling? flat? Are there any trees, drainage ditches, unusual features?) What is the extent of its use? What are the limitations? What do you like about the site? What don't you like? Why?
2. Look at a collection of slides showing environmental problems on various school sites. Which coincide with the problems on your site? What did those schools do about the problems? Could you do the same things? Why or why not?
3. Examine the school site again. Look for specific problems on the site. (Soil erosion on the playground or parking lot, dumping of trash on a part of the site, odors or residue from the school incinerator, use of the school site for riding motorcycles and mini-bikes, traffic problems). How do these problems affect the use of the site? Who is responsible for creating these problems?
4. Take a census among the students of your class. Which problem on your site disturbs you most? Why? What can you do about it? How far are you willing to go? Can you work together to help solve the problem?

5. Discuss how you can initiate a change or improvement on the site. Who do you express your concerns to? Who has to approve your plans? How do you involve these people? (Principal, teachers, student council, students.) Select a student to inform the principal of your area of concern. Ask permission to call in resource people concerning the problem.

6. Decide who are the people who can add solutions to the site problem, along with student's suggestions. Invite resource people to speak on the site problem, (i.e., environmental education consultant, police officer, Soil Conservation Agent, etc.). If the site problem is something that may involve a law violation or enforcement, invite the township supervisor or a police department official to discuss this with the class.

7. Formulate a plan to solve or improve the problem. Based on the information acquired from the resource people and from how other schools solved similar problems, decide what could be done about the problem at the school level.

8. Chart out the basic ideas of the plan. Develop alternative solutions. Invite the principal and student council to a presentation about the problem. Parent or citizen participation may be appropriate also.

9. Inform the student body of the plan, by way of a playlet, panel, readings, or a presentation of some form. What should be included in the information? (Define the problem, give alternate solutions, relate the plan of action, tell about the steps needed to implement the plan.

10. Seek publicity concerning the plan (school newspaper, local newspaper, posters).

11. Meet with the principal and/or student council to map out the strategy for implementation. Follow through with the plan of action.

12. Discuss some of the environmental problems that are found in the community. Where would you go for information and to present a plan of action? (township or city)

13. Look at the filmstrips "Environmental Crisis"* in the research center, which show problems on a regional and national scope. Where would you expect to seek remedies for state problems? For National problems? World problems?

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* See information on this filmstrip in pollution encounter.

Lower Elementary
Transportation Encounter

Gail Agne
Ellen Vande Visse

The Automobile and the Alternatives

Behavioral Objectives

At the completion of a successful encounter, the student should be able to:

1. Choose 15 pictures out of a set of 20 pictured objects which show a method of transportation and correctly name them orally.
2. Choose the automobile picture among the 15 transportation pictures as the main form of transportation in his/her community.
3. Name (orally) two reasons why the auto is an inefficient method of transportation.
4. Draw a picture of (or list) 3 modes of transportation which are less polluting (more efficient) than the auto.
5. Draw (or write) one means of transportation which he/she could use which is less polluting than an automobile.
6. Name (orally) two reasons why the method chosen is less polluting than the auto.

Activities

1. Discussion and classroom survey:
   a. Introduce the term "transportation" and the various means of transportation used today (horse, airplane, train, rockets, boats, bicycles, etc.) through pictures and discussion.
   b. What form of transportation does your mother, father, or guardian use to go to work, shopping, traveling?
   c. Have the class draw or list these different kinds of transportation used and how many use each.
   d. Why don't they use rockets, horses, or steamliners?
   e. Does your family own a car? How many? What is the total number of autos for the classroom?
   f. How do you get to and from school? List and total the results.

g. Which kind of transportation do you think most Americans use most often to go to work, shop, vacation?

h. What forms of transportation cause the most pollution? What kinds of pollution (air pollution, traffic jams, noise, use of energy, use of metal, etc.)?

i. What forms of transportation cause the least pollution?

j. What is meant by the word "efficient"? For example, how many children ride the school bus? How many cars would it take to carry that same amount of people? (One school bus engine does less work and uses less gasoline than several auto engines all working at once.)

2. Street Corner Survey:

a. Divide the class into small survey teams. Each team should have a parent or aide and a pencil and paper.

b. Have each team stand on a different street curb or corner near school and tally:

The number of autos	The number of autos carrying one person	The number of autos carrying more than one person

c. Have teams pool their totals on a chart in the room. How many cars had more than one person in them? How many had only one person per car?

3. Self-Assessment:

a. What other ways can you travel to and from school?

b. What is the best transportation method for you?
Which is the easiest?
Which is the most efficient?
Which causes the least pollution?
Which method would you be willing to try for 2 weeks?

4. For Further Discussion:

a. What else can be done to make transportation to school more efficient?
   Fewer bus stops?
   Teacher car pools?
   Bike Trails?

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*Note to teacher:
vocabulary to be developed

transportation
efficient
inefficient
tally
pollution, air pollution
traffic, traffic jams
energy use

Lower Elementary
Water Quality

Dolores Furesz

INVESTIGATING THE POND COMMUNITY

BEHAVIORAL OBJECTIVES:

At the completion of a successful encounter, the student should be able to:

1. Describe the pond community.
2. Explain simply the idea of a food chain.
3. List the three levels of a food chain in the pond community.
4. Identify what happens to the total pond community when one of its parts is altered.
5. List (number) ways man is affecting the pond's ecosystem.
6. Develop a plan of action to help resolve one of the problem areas.
7. Implement the plan of action developed in objective #6.

ACTIVITIES:

1. Visit a pond. Take samples of water bottom, water, plants, fish and other living organisms.
2. Assemble a sealed world for the class to observe. The sealed world demonstrates the interdependence of plants and animals and their relationship to the non-living world. It also demonstrates the cycles of photosynthesis, respiration and food chains.

   To make a sealed world one needs:

   One gallon jar, with sand or gravel in the bottom; pond water to within one inch of lip of jar; 4 or 5 small plants, one or two small fish, one or two snails. Screw cap on and seal with paraffin. Place jar where it will get light, but not direct sunlight.
3. Show slides which illustrate the variety of plant and animal life found in ponds.
4. Draw a picture depicting the food chain. Why is this important to a pond? What might happen if a part of the chain is removed or disappears?

5. Draw a picture to show the three levels of a food chain.

   a. Producers (plants)
   b. Consumers (fish, crustaceans)
   c. Decomposers (bacteria, fungi)

6. Draw a series of pictures showing what happens when:

   a. Sunlight is reduced. (No plant growth: no oxygen produced, which is needed by all living things found in the water.)
   b. Plants are reduced or removed. (Reduction or elimination of source of oxygen to the living things in the pond.)
   c. Plant eaters are reduced or removed. (Plant growth goes unchecked, profuse growth affects oxygen levels at night, which many fish cannot tolerate.)
   d. Soil is disturbed in some way. (Water becomes turbid, does not allow the same penetration of sunlight as before, reducing production of oxygen by plants; silt covers up fish eggs and other living things along the bottom: affects the gills of fish.)
   e. Bacteria is reduced. (Dead plants and animals would not be reduced to the nutrients and chemicals necessary to support plant growth; odor; a much more rapid filling in of the pond.)

7. Describe ways the ponds can be altered by "outside" forces: people living, working or recreating in the pond's immediate area. How do they change the characteristics of ponds? Could this have a negative effect on man's use of ponds? How?

8. Develop a presentation for each problem area on ways we can help resolve the problem. Invite parents and concerned citizens to hear the presentations and attempt through these presentations to generate an interest in adults to form an action group to work on these problems.

Lower Elementary
Water Quality

Pat Sarner

INVESTIGATING WATER POLLUTION AS EVERYONE'S PROBLEM

BEHAVIORAL OBJECTIVES:

At the completion of a successful encounter, the student should be able to:

1. Define water pollution.
2. Describe (number) ways water is polluted by people.
3. Describe (number) reasons why it is important for each of us to do his part in preventing pollution.
4. Draw (number) ways that you use unpolluted water, at home, at play, and on vacation.
5. Identify (number) types of pollution in (name) River.

ACTIVITIES:

1. Teacher preparations: Fill a small aquarium half full of fresh water prior to the beginning of the school day. Then:
   a. Place where it is easily accessible to the students (do not refer to it).
   b. Gradually add pollutants found around the school, left-over milk, paper, dirt, grass, etc.
   c. As the material begins to fill the container and becomes odorous after several days, the children will naturally become curious about it as they watch the changes.
2. Discussion:
   a. Discuss the changes they have observed taking place.
   b. What do you think caused the changes?
   c. Have you ever thrown one or more of these pollutants into a body of water?
   d. Do you think that what you threw in made any difference in the freshness of the water, especially since there was so much water?
3. Let's pretend this jar of water is a lake, and this drop of ink, (or clothes bluing) is a pollutant that I just threw into the lake.
   a. Did this one drop change the color of the "lake" much?
   b. Now each of you put in a drop of "pollutant" into our lake -- is the color much different now?
   c. Do you think you would like to swim in our lake now?
   d. Since each of us put in only one drop of pollutant why is our lake so polluted?
   e. Why is it important for each of us not be a water polluter?

4. Think of some of the ways we use fresh water. The first two rows of students draw ways we use fresh water at home. The second two rows draw how we use fresh water at play, and the last two rows, how we use it during our vacation.

5. Display and discuss each category.

6. Tour the (name) River and identify different types of water pollution. Before leaving the (Name) River help reduce one type of pollution (such as removing paper and cans).

Lower Elementary
Water Quality

Loraine Turcotte

INVESTIGATING WHAT WATER DOES TO SCHOOLYARD AND WHERE IT GOES

BEHAVIORAL OBJECTIVES:

At the completion of a successful encounter, the student should be able to:

1. Identify how and explain why water moves off the playground or school area.
2. Identify how different surfaces determine a water's course.
3. Describe how water can wear away or "cut" into soil and make a path in running off to other places.
4. Speculate where this water eventually goes and what it does with the dirt it takes with it.

ACTIVITIES:

1. A walk around a schoolyard after a rain. Do you see puddles? Where? Do you see big and little puddles? Are the big puddles on higher land, lower land? Where is the water running from? or to? Why does water go down hill? Do you see ruts in the dirt? Where did the soil go that used to be in the ruts? Are similar ruts in grassy area? Why not?
2. Take an empty #10 tin can - cut out at both ends. Have students move to "black top" area of playground. Place can over this type of surface and have them pour water into containers. Where did the water go? Repeat experiment in a sandy area and in a grassy area. What happened to the water in each case? Why?
3. Go to "black top" area of playground. Have students observe what happened to the water once it ran into the soil from the black top. Have students discover other such run-offs. Is there more surface run-off from the black top than from similar areas of grass?
4. Set up a model of a drainage situation like that observed. By use of sand or dirt have students create terrain and then pour water on the model. Where is the water going? What is it doing to the dirt or sand? How can you prevent the dirt or sand from washing away?
5. If there is a heavy run off of water from the school year investigate where this flow of water is going. Does it go into a brook or into the ground? Where does the brook go? Where does the water in the ground go?

   (A carry over into the subjects of underground water and springs could be another encounter.)